CODE No.: 16BT1BS01 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

ENGINEERING CHEMISTRY

[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)	Prove that dissolved oxygen and carbon dioxide are responsible for boiler corrosion.	7 Marks
	b)	Illustrate the details of scale and sludge formation in boilers and explain the methods for their prevention.	7 Marks
		(OR)	
2	a)	Explain the various disadvantages of hard water in domestic and industrial use.	7 Marks
	b)	A ground water sample has the following composition: $Ca(HCO^3)^2$ = 16.2 ppm, $Mg(HCO^3)^2$ = 14.6 ppm, MgCl = 9.5 ppm, $MgSo^4$ = 12.0 ppm and $CaSo^4$ = 13.6 ppm. Calculate carbonate and non-carbonate hardness of water.	7 Marks

UNIT-II

3	a)	Write a brief note on extrinsic conducting polymers.	7 Marks
	b)	Write the engineering applications of conducting polymers.	7 Marks
		(OR)	
4		What are conducting polymers? Classify the conducting polymers with examples.	14 Marks

UNIT-III

5		How the Green Chemistry manages Science and Technology in environmental friendly way?	14 Marks
		(OR)	
6	a)	What are green solvents? Explain their significance.	7 Marks
	b)	Write the synthesis of bio-diesel using Transesterification method.	7 Marks

UNIT-IV

7		Demonstrate the working principle involved in bio-fuel cell and write its applications.	14 Marks
		(OR)	
8		How solid oxide fuel cell is advantageous when compared to other fuel cells? Discuss its working principle, construction and applications.	14 Marks

UNIT-V

9		Explain the mechanism of following types of corrosion. i) Galvanic corrosion. ii) Concentration cell corrosion.	14 Marks
		(OR)	
10		Discuss the various factors influencing the rate of corrosion.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

ENGINEERING PHYSICS

[Electrical and Electronics Engineering, Electronics and Communications 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: i) Metastable state. ii) Population inversion. iii) Pumping. iv) Active medium.	4 Marks
	b)	What are Einstein's coefficients? Derive the relation among them.	10 Marks
		(OR)	
2	a)	Define: i) Acceptance angle. ii) Acceptance cone. iii) Numerical aperture.	4 Marks
	b)	Derive equations for acceptance angle and numerical aperture. An optical fiber has a numerical aperture of 0.20 and a cladding refractive index of 1.59. Find the acceptance angle for the fiber in water which has a refractive index of 1.33.	10 Marks

UNIT-II

3		Discuss the motion of an electron in a periodic lattice and explain the formation of energy bands.	14 Marks
		(OR)	
4	a)	Explain the Fermi-Dirac distribution function of electrons.	7 Marks
	b)	Distinguish between conductors, insulators and semiconductors based on band theory.	7 Marks

UNIT-III

5	a)	Explain the following: i) Dielectric constant. ii) Electric susceptibility. iii) Electric polarization. iv) Polarizability.	4 Marks
	b)	Discuss in detail about the different type of polarization.	10 Marks
		(OR)	
6	a)	Obtain an expression for the internal field experienced by an atom in a dielectric material.	10 Marks
	b)	Write short note on ferroelectricity.	4 Marks

UNIT-IV

7	a)	Describe the BCS theory of superconductivity.	7 Marks
	b)	Describe Josephson effects and their applications.	7 Marks
		(OR)	
8	a)	What are the basic requirements of an acoustically good hall?	5 Marks
	b)	Write a note on reverberation and reverberation time. Derive Sabine's mathematical relation for reverberation time.	9 Marks

UNIT-V

9	a)	Explain the basic properties of nanomaterials.	7 Marks
	b)	Explain few applications of nanomaterials in different fields.	7 Marks
		(OR)	
10	a)	Briefly explain the principle factors that affect the properties of nanomaterials.	4 Marks
	b)	Describe the deposition of nanomaterials by using ball milling method. Give few applications of nanomaterials in science and technology.	10 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

MATRICES AND NUMERICAL METHODS

[Civil Engineering, Mechanical Engineering, 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) Define the rank of a matrix. Reduce the matrix $\begin{bmatrix} 3 & 1 & 4 & 6 \\ 2 & 1 & 2 & 4 \\ 4 & 2 & 5 & 8 \\ 1 & 1 & 2 & 2 \end{bmatrix}$ into Echelon form and evaluate its rank. 7 Marks

b) Apply Gauss Jordan method, find the inverse of the matrix A= $\begin{bmatrix} -2 & 1 & 3 \\ 0 & -1 & 1 \\ 1 & 2 & 0 \end{bmatrix}$. 7 Marks

(OR)

2 Write all possible normal forms of the matrix. Determine the rank of the matrix, $\begin{bmatrix} 1 & 2 & -1 & 3 \\ 4 & 1 & 2 & 1 \\ 3 & -1 & 1 & 2 \\ 1 & 2 & 0 & 1 \end{bmatrix}$ by reducing it to the corresponding normal form. 14 Marks

UNIT-II

3 Applying Bisection method, estimate an approximate root correct to two decimal places for the equation $x^3 - x - 1 = 0$. 14 Marks

(OR)

4 Establish a formula $x_{n+1} = \frac{1}{2}\left(x_n + \frac{N}{x_n} \right)$ for a square root of a number by Newton-Raphson's method and hence deduce that $\sqrt{10}$. 14 Marks

UNIT-III

5 a) Choose the appropriate interpolation formula and estimate the value of $e^{1.75}$ from the following data. 7 Marks

x	1.7	1.8	1.9	2.0
$y = e^x$	5.474	6.050	6.686	7.389

b) Estimate the population for the year 1925 from the data given below. 7 Marks

Year x	1891	1901	1911	1921	1931
Population y (in lakhs)	46	66	81	93	101

(OR)

6 a) Prove the results (i) $\Delta = \frac{\delta^2}{2} + \delta\sqrt{1+\frac{\delta^2}{4}}$ (ii) $\mu\delta = \frac{1}{2}\Delta E^{-1} + \frac{1}{2}\Delta$. 7 Marks

b) Write Newton's backward interpolation formula and using it estimate the value of $f(42)$ from the following data. 7 Marks

x	20	25	30	35	40	45
$f(x)$	354	332	291	260	231	204

UNIT-IV

7 a) Estimate $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ for $x = 1.2$ from the following table of values of x and y. 7 Marks

x	1.0	1.2	1.4	1.6	1.8	2.0	2.2
y	2.7183	3.3201	4.0552	4.9530	6.0496	7.3891	9.0250

b) State Simpson's 1/3 rule and applying it evaluate $\int_0^2 e^{-x^2}dx$ taking h = 0.25. 7 Marks

(OR)

8 a) Obtain $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ at $x = 1.6$ from the following table. 7 Marks

x	1.0	1.1	1.2	1.3	1.4	1.5	1.6
y	7.989	8.403	8.781	9.129	9.451	9.750	10.031

b) Apply Simpson's $\frac{1}{3}$ rd rule to find $\int_0^{0.6} e^{-x^2}dx$ by taking seven ordinates. 7 Marks

UNIT-V

9 Write Taylors iteration formula for numerical solution of a differential equation and applying it, estimate the approximate value of $y(0.1)$ and $y(0.2)$, given that $y' = 2x + 3e^x$, $y(0) = 0$. Compare the numerical solution obtained with exact solution. 14 Marks

(OR)

10 Write Runge-Kutta 4th order formulae and use it to evaluate $y(0.1)$ and $y(0.2)$ given $y' = x^2 - y$ and $y(0)=1$. Compare the numerical solution obtained with analytical solution. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

MULTI-VARIABLE CALCULUS AND DIFFERENTIAL EQUATIONS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Evaluate the family of curves whose differential equation is $\frac{dy}{dx}(x^2y^3 + xy) = 1$. 7 Marks

b) State the general form of Bernoulli type differential equation and solve the differential equation $(1-x^2)\frac{dy}{dx} + xy = y^3 \sin^{-1} x$. 7 Marks

(OR)

2 a) Reduce the differential equation $\frac{dy}{dx} + x\sin 2y = x^3\cos^2 y$ into linear equation by suitable substitution and solve it. 7 Marks

b) Solve the differential equation $2y\cos y^2 \frac{dy}{dx} - \frac{2}{x+1}\sin y^2 = (x+1)^3$ by reducing it into linear form. 7 Marks

UNIT-II

3 a) Solve the differential equation $\frac{d^2y}{dx^2} - 4\frac{dy}{dx} + 3y = \sin 3x \cos 2x$. 7 Marks

b) Establish solution of the differential equation $y'' + 4y' + 4y = 4\cos x + 3\sin x$ satisfying the conditions $y(0) = 0,\ y'(0) = 0$. 7 Marks

(OR)

4 a) By the technique of finding the particular integrals, find the general solution of the differential equation $(D^2 + 4D + 13)y = 2e^{-x}$ 7 Marks

b) Write the general form of a non-homogeneous differential equation of order **n** and establish a general solution for the differential equation. 7 Marks
$(D+2)(D-1)^2 y = e^{-2x} + 2\sinh x$.

UNIT-III

5 a) If $u = x^2 - y^2, v = 2xy$ where $x = r\cos\theta$, $y = r\sin\theta$ then show that $\frac{\partial(u,v)}{\partial(r,\theta)} = 4r^3$. 7 Marks

b) A rectangular box open at the top is to have a volume of 32 cubic feet. Find the dimensions of the box requiring least material for its construction using technique of finding maxima and minima. 7 Marks

(OR)

6 a) If $u = \sin^{-1}(x - y)$ where $x = 3t$ and $y = 4t^3$ then show that $\frac{du}{dt} = \frac{3}{\sqrt{1-t^2}}$. 5 Marks

b) Define Jacobian of two functions u and v with respect to x and y. If $x = r\cos\theta$, $y = r\sin\theta$ then evaluate the values of $\frac{\partial(x,y)}{\partial(r,\theta)}$ and $\frac{\partial(r,\theta)}{\partial(x,y)}$. Also establish the fact that $\frac{\partial(x,y)}{\partial(r,\theta)} \times \frac{\partial(r,\theta)}{\partial(x,y)} = 1$ 9 Marks

UNIT-IV

7 a) Evaluate $\iint (x^2 + y^2)dxdy$ in the positive quadrant for which $\boldsymbol{x + y \leq 1}$. 7 Marks

b) Evaluate $\iint (x + y)dxdy$ over the region of the positive quadrant bounded by the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$. 7 Marks

(OR)

8 a) Find the surface area of the solid generated by revolving one arc of the cycloid **$x = a(\theta - \sin\theta)$, $y = a(1 - \cos\theta)$** about the base. 7 Marks

b) Find the perimeter of the loop of the curve $3a y^2 = x(x - a)^2$. 7 Marks

UNIT-V

9 a) Define the divergence of a vector point function and find div $\bar{f}$ where $\bar{f} = r^n \bar{r}$. Find n if it is solenoidal. 7 Marks

b) Define curl of a vector point function and hence show that if $\bar{r}$ is the position vector of any point in the space then $r^n \bar{r}$ is irrotational. 7 Marks

(OR)

10 a) Prove that **$\text{div}(\text{grad } r^m) = m(m+1) r^{m-2}$** where $\bar{r} = x\bar{i} + y\bar{j} + z\bar{k}$ and r $= |\bar{r}|$ 9 Marks

b) Define scalar potential and find constants a, b and c so that the vector $\bar{A} = (x + 2y + az)\bar{i} + (bx - 3y - z)\bar{j} + (4x + cy + 2z)\bar{k}$ is irrotational and also find ϕ such that $\bar{A} = \nabla\phi$ 5 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

TECHNICAL ENGLISH

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Explain various modes of communication and state on what basis they are categorized.	14 Marks
	(OR)	
2	Distinguish between Intrapersonal, Interpersonal and Organisational barriers to communication.	14 Marks

UNIT-II

3	State the factors on which the listening modes depend and elaborate on different kinds of listening modes.	14 Marks
	(OR)	
4	Illustrate the barriers to effective listening with suitable remedies.	14 Marks

UNIT-III

5	Differentiate various types of speaking.	14 Marks
	(OR)	
6	Discuss the attributes of persuasive speaking.	14 Marks

UNIT-IV

7	Differentiate between the reading of a general article and a journal article; reading an essay and a novel.	14 Marks
	(OR)	
8	Discuss elaborately SQ3R reading technique.	14 Marks

UNIT-V

9	State the importance of the referencing and styling and write a short note on how to avoid plagiarism.	14 Marks
	(OR)	
10	"Using the right words in the right context is one of the essential elements of effective writing". Illustrate.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

ELECTRIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define power, current, voltage, network, circuit, node, branch and loop. 7 Marks

b) A 100Ω resistance is directly switched on across a 10V battery. What is the current through the resistor? How much is the power loss? Also find the energy consumed in 5 seconds. 7 Marks

(OR)

2 a) Distinguish between: i) Independent and dependent sources. 7 Marks
ii) Ideal and practical sources.

b) Find the total power dissipated in the circuit shown in the Fig.1 (All resistances are in ohms). 7 Marks

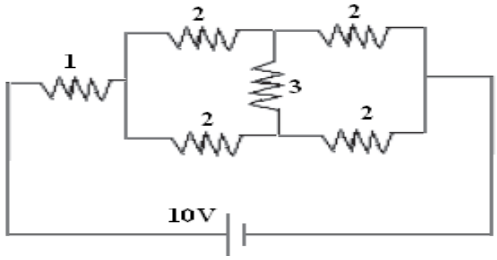

Fig.1

UNIT-II

3 a) Explain the concept of active, reactive and apparent power and draw the power triangle. 6 Marks

b) Use nodal analysis to compute $v_0(t)$ in the circuit of Fig.2. 8 Marks

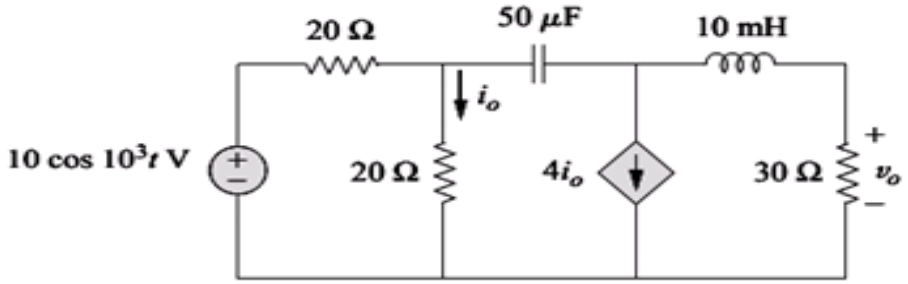

Fig.2

(OR)

4 a) Design a series RLC circuit that resonates at 1.5KHz and consumes 50W from a 50V AC source operating at the resonance frequency. The bandwidth is 0.75KHz 6 Marks

b) Compute the RMS value of the voltage waveform shown in Fig.3. 8 Marks

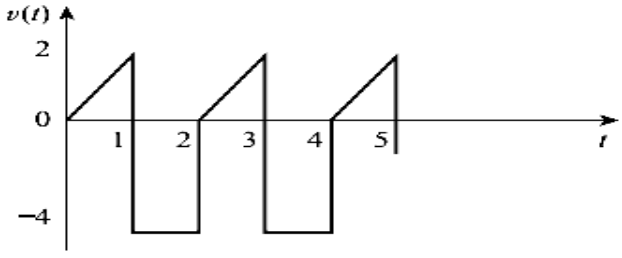

Fig.3

UNIT-III

5 a) Explain the procedure used to solve a network problem using superposition theorem. 7 Marks

b) Find the current in the 6Ω resistor using superposition theorem shown in Fig.4. 7 Marks

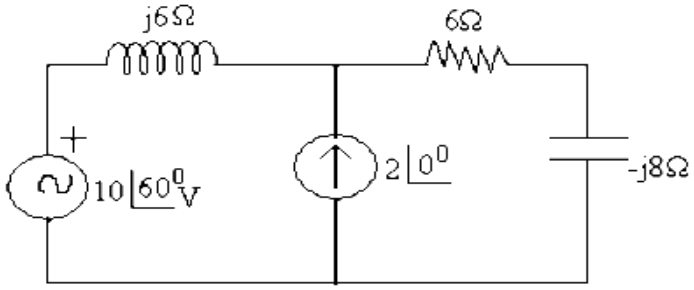

Fig.4

(OR)

6 a) State and explain Reciprocity theorem. 7 Marks

b) Find the current through 8Ω resistor using Thevenin's theorem shown in Fig.5. 7 Marks

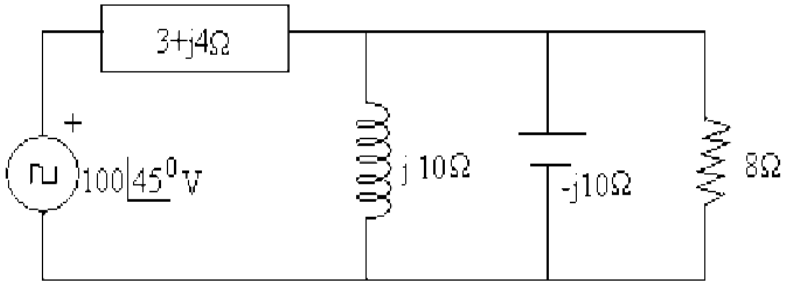

Fig.5

UNIT-IV

7 a) Differentiate polyphase systems with single phase systems. Also enlist the advantages of polyphase system over single phase system. 6 Marks

b) Calculate the line currents in the three wire Y-Y system of Fig.6. 8 Marks

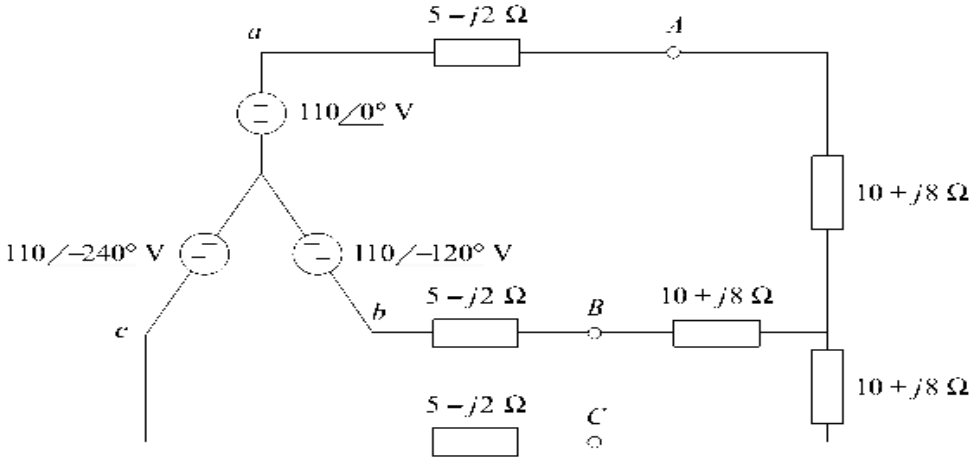

Fig.6

(OR)

8 a) Define phase sequence in polyphase systems and discuss its importance in a polyphase system. 6 Marks

b) One line voltage of a balanced Y-connected source is $V_{AB} = 120\angle -20^0 V$. If the source is connected to a Δ-connected load of $20\angle 40^0 \Omega$, find the phase and line currents. Assume the ***abc*** phase sequence 8 Marks

UNIT-V

9 a) Derive the expressions for equivalent inductance of two coils in series with i) Series aiding. ii) Series opposition. 6 Marks

b) Calculate the mesh currents shown in Fig.7. 8 Marks

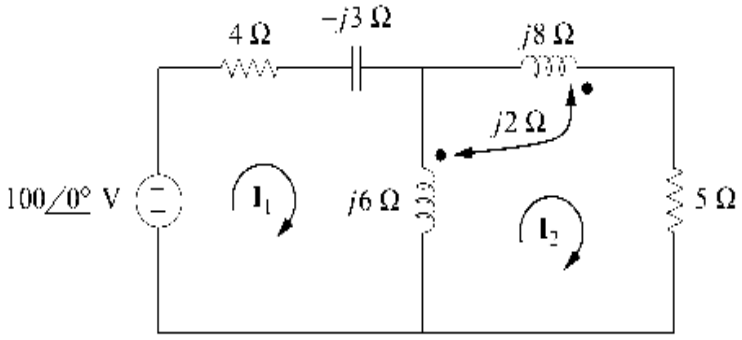

Fig.7

(OR)

10 a) Determine the voltage $\mathbf{V_0}$ in the circuit of Fig.8. 7 Marks

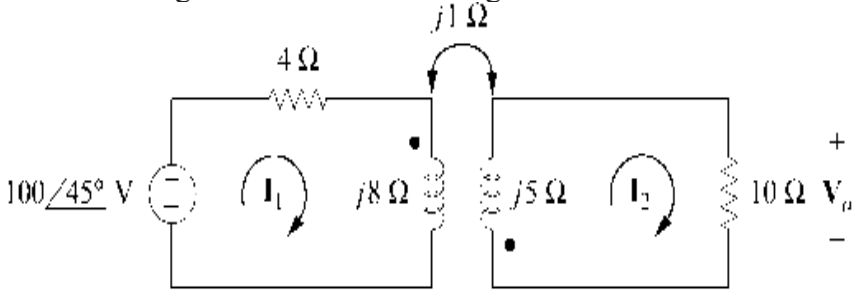

Fig.8

b) For the circuit in Fig.9, determine the coupling coefficient and the energy stored in the coupled inductors at t = 1.5s. 7 Marks

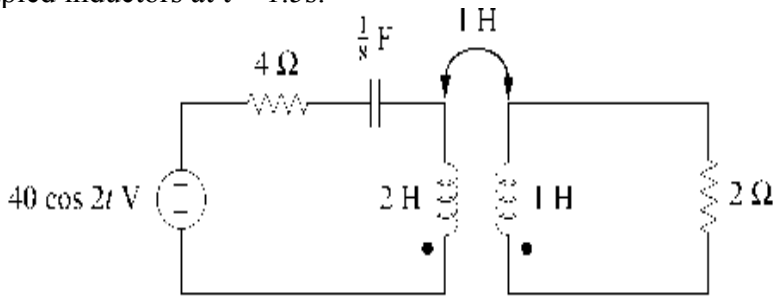

Fig.9

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

NETWORK ANALYSIS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

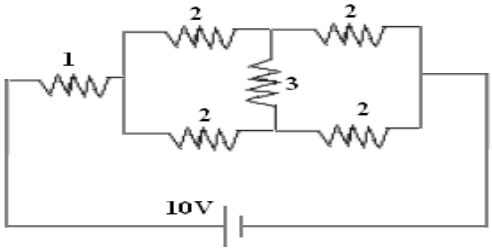
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Distinguish between: 7 Marks
i) Independent and dependent sources. ii) Ideal and practical sources.

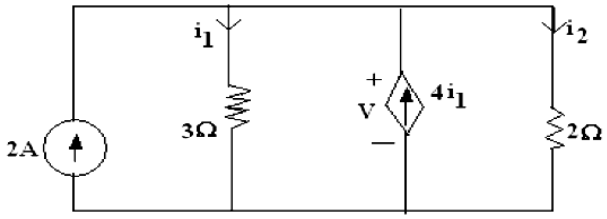
b) Find the total power dissipated in the circuit shown in the figure (All resistances are in ohms). 7 Marks



(OR)

2 a) What are passive and active elements? Explain the volt-current relationship for passive elements with examples. 7 Marks

b) Using Kirchoff's current law, find the values of the currents $\mathbf{i_1}$ and $\mathbf{i_2}$ in the circuit shown in figure. 7 Marks



UNIT-II

3 a) Draw the locus diagram of series RL circuit with R as variable. 7 Marks

b) A supply of 400V, 50Hz is applied to a series RC circuit. Find the value of C if the power absorbed by the resistor is 500W at 150V. What is the energy stored in a capacitor? 7 Marks

(OR)

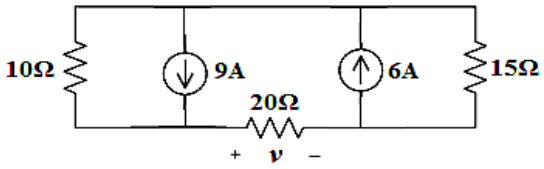
4 a) Explain the concept of active, reactive and apparent power and draw the power triangle. 7 Marks

b) In an AC circuit with 500sin100t as source voltage, connected across series combination of resistance and capacitance of 10Ω and 10F respectively, calculate the source current flowing through the circuit. Also construct impedance and power triangles. 7 Marks

UNIT-III

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

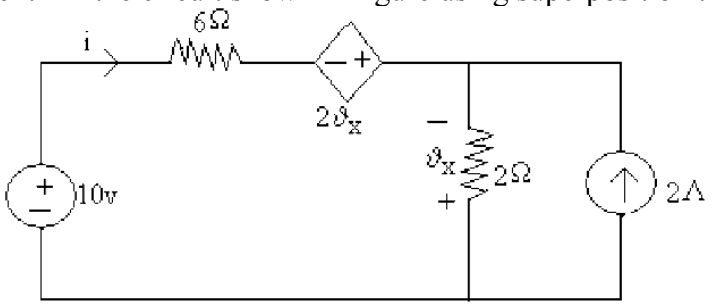
b) In the circuit shown below, find the voltage across the 20Ω resistor using superposition theorem. 7 Marks



(OR)

6 a) State and explain maximum power transfer theorem and derive the necessary conditions for maximum power transfer for DC excitations. 5 Marks

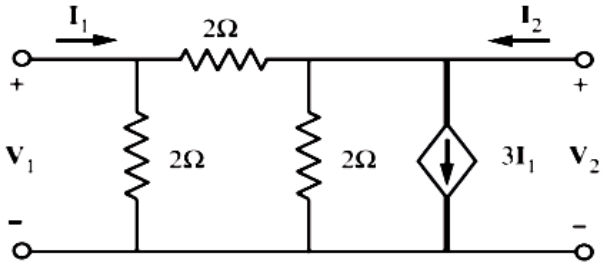
b) Find the current **i** in the circuit shown in figure using superposition theorem. 9 Marks



UNIT-IV

7 a) The Z parameters of a two port network are $Z_{11} = 6\Omega$, $Z_{22} = 4\Omega$, $Z_{12} = Z_{21} = 3\Omega$. Compute Y and ABCD parameters and write the describing equations. 7 Marks

b) Determine the admittance parameters for the network shown in figure. Identify whether the netwok is symmetrical, reciprocal or not? 7 Marks



(OR)

8 a) Define reciprocity and symmetry for a generalized two port network and derive the conditions for reciprocity and symmetry in terms of Z parameters. 7 Marks

b) Y-parameters for a two port network are given as $Y_{11} = 0.75$, $Y_{12} = Y_{21} = -0.25$ and $Y_{22} = 0.8$. Design an equivalent π-network. 7 Marks

UNIT-V

9 a) A DC voltage of 20V is applied to a RL circuit with R = 5Ω and L=10H. Find the time constant and the maximum value of stored energy. 7 Marks

b) In a series RL circuit, the application of a DC voltage results in a current of 0.741 times the final steady state value of current after 1 sec. However, after the current has reached its final value, the source is short circuited. What would be the value of current after one second? 7 Marks

(OR)

10 A series RC circuit with R = 100Ω and C = 25μF has a sinusoidal excitation $v(t) = 250 \sin 500t$. Find the total current assuming that the capacitor is initially uncharged. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech I Semester (SVEC-16) Supplementary Examinations June – 2018

PROGRAMMING IN C

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe two different ways to utilize the increment and decrement operators. Explain with suitable examples.	7 Marks
	b)	Define unary operators. How many operands are associated with unary operators? Explain with examples.	7 Marks
		(OR)	
2	a)	List and explain logical operators with examples.	7 Marks
	b)	Define expression and state the process of expression evaluation.	7 Marks

UNIT-II

3	a)	Illustrate nested if…else and switch statements with flowcharts.	7 Marks
	b)	Write a 'C' program to check whether the given number is even or odd using switch case.	7 Marks
		(OR)	
4	a)	Distinguish conditional and un-conditional branch statements with examples.	7 Marks
	b)	Write a 'C' program that prints the grade according to the score secured by a student. (ex: if score>90 then print grade 'A', if score<90 and >80 then 'B' soon...)	7 Marks

UNIT-III

5	a)	Illustrate nesting of functions.	7 Marks
	b)	Differentiate return statement with **exit()** function.	7 Marks
		(OR)	
6		List various parameter-passing methods available. Explain them with example programs.	14 Marks

UNIT-IV

7	a)	Illustrate pointers and arrays with examples.	7 Marks
	b)	Write a short note on void pointers.	7 Marks
		(OR)	
8		How to process 2-dimensional arrays using pointer notations? Illustrate with examples.	14 Marks

UNIT-V

9	a)	"Structures can be Nested". Justify with an example.	7 Marks
	b)	Write a 'C' program to compare two structures.	7 Marks
		(OR)	
10	a)	What are the different ways to pass a structure as an argument to a function?	7 Marks
	b)	Write a 'C' program to read, write, add and multiply two complex numbers. (Note: represent complex number using structure).	7 Marks

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CODE No.: 16BT1BS01 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

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

ENGINEERING CHEMISTRY

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define hardness of water and give various units of hardness, interrelate various units with p.p.m.	7 Marks
	b)	Explain the various disadvantages of hard water in domestic and industrial use.	7 Marks
		(OR)	
2	a)	Engineer is asked to explore the suitability of SVEC ground water to startup a min STEAM power plant in the College campus. Water sample is observed to contain the following **$CaCl_2$, NaCl, $MgCO_3$, $MgSO_4$, O_2, HCl, SiO_2** and **Oil**. Your answer should contain definition, disadvantages, reactions and removal methods for the foreseen boiler operational troubles.	8 Marks
	b)	Explain to a friend who is not registered in your course about **Why and How** "water Harvesting".	6 Marks

UNIT-II

3	a)	Explain the conduction mechanism of any one conjugated conducting polymer.	7 Marks
	b)	Discuss the engineering applications of the plastics and bio-degradable polymers.	7 Marks
		(OR)	
4	a)	Discuss the preparation, properties and uses of PC and PMMA resin.	7 Marks
	b)	Distinguish between thermo plastics and thermo sets.	7 Marks

UNIT-III

5	a)	How can we design safer chemicals for environment pollution? Explain with the help of suitable examples.	7 Marks
	b)	Explain with the help of suitable examples how the properties of nanomaterials differ from those of the same materials in bulk size.	7 Marks
		(OR)	
6		Explain in detail about the classification of nanomaterials	14 Marks

UNIT-IV

7		Define fuel cell. Explain the construction, working of **H_2-O_2** fuel cell and write its applications.	14 Marks
		(OR)	
8	a)	Explain the difference between a rechargeable battery and one that must be discarded. Use a NiCad battery and dry cell as examples.	8 Marks
	b)	Is there a difference between a galvanic cell and an electrochemical cell? Explain, giving examples to support your answer.	6 Marks

UNIT-V

9	a)	What are the functions of lubricants?	6 Marks
	b)	What is galvanizing? Illustrate the Nickel electroplating.	8 Marks
		(OR)	
10	a)	Explain the electrochemical mechanism of rusting of iron in humid atmosphere. Mention any four factors that affect the rate of corrosion.	8 Marks
	b)	How can you determine the flash and fire points of a lubricant with the help of a Pensky- Martin apparatus?	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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

ENGINEERING PHYSICS

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

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

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

UNIT-I

1	a)	Write about different types of optical fibers.	6 Marks
	b)	What are the advantages and disadvantages of an optical fiber?	4 Marks
	c)	Write industrial applications of LASERS.	4 Marks
		(OR)	
2	a)	What is acceptance angle and derive condition for accepting the light to propagate through the optical fiber by means of total internal reflection?	6 Marks
	b)	Define total internal reflection. Explain it with diagram.	4 Marks
	c)	Explain the applications of LASERS in engineering.	4 Marks

UNIT-II

3		Derive time-independent Schrodinger wave equation and apply it to obtain the solution for a particle in a one-dimensional well of infinite height.	14 Marks
		(OR)	
4	a)	Explain Fermi-Dirac distribution of electrons in various energy levels and its effect of temperature.	8 Marks
	b)	Distinguish Conductors, Insulators and Semiconductors based on their band formation.	6 Marks

UNIT-III

5	a)	Write a brief description of various types of polarization in dielectric materials with neat diagrams.	8 Marks
	b)	Explain the frequency dependence of various types of polarizations with a neat graph.	6 Marks
		(OR)	
6	a)	Write short note on drift and diffusion current. Derive the relation between mobility and diffusion constant.	8 Marks
	b)	Write the process of current generation in a solar cell and its applications.	6 Marks

UNIT-IV

7	a)	Differentiate between Noise, Music and Sound. Explain the main characteristics of a musical sound.	8 Marks
	b)	Explain the difference between ordered sound and disordered sound.	6 Marks
		(OR)	
8	a)	Describe an expression for the intensity of sound waves.	6 Marks
	b)	Define Reverberation. Discuss Sabine's formula for Reverberation time.	8 Marks

UNIT-V

9	a)	What is nanoscience and nanotechnology? What is the difference between the two?	8 Marks
	b)	Discuss the importance of nanoscience in various fields. Give examples where nanoscience plays an important role.	6 Marks
		(OR)	
10	a)	List various approaches and methods to synthesize nano particles.	6 Marks
	b)	Describe the synthesis of nano materials using ball-milling method with a sketch. Write advantages and disadvantages.	8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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

TECHNICAL ENGLISH

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) What is the importance of grammaticality and good vocabulary in verbal communication? 7 Marks

b) Discuss Aesthetic communication, Visual communication with relevance to non-verbal communication. 7 Marks

(OR)

2 What is Language? List out the characteristics of Language with brief illustrations. 14 Marks

UNIT-II

3 a) Explain the following with suitable examples: 7 Marks
i) Discriminative listening. ii) Comprehension listening.
iii) Critical listening.

b) Explain the following with suitable examples: 7 Marks
i) Biased listening. ii) Evaluative listening. iii) Appreciative listening.

(OR)

4 Explain the following with suitable examples: 14 Marks
i) Empathetic listening. ii) Therapeutic listening.
iii) Relationship listening.

UNIT-III

5 a) What do you mean by persuasive speaking? Discuss the following. 7 Marks
i) The Challenge. ii) Mental Preparation.
iii) Audience need. iv) Convincing. v) Credibility.

b) Convince the people of your surroundings about long term benefits of demonetizing policy of the Prime Minister. (Use persuasive skills). 7 Marks

(OR)

6 Illustrate the most possible ways to elevate confidence, clarity and fluency in speeches and presentations. 14 Marks

UNIT-IV

7 a) What do you mean by study skills? Discuss: 7 Marks
i) Time Scheduling.
ii) Concentration.
iii) Listening and Note taking.
iv) Reading
v) Writing Skills.

b) Discuss the following statements with reference to study skills 7 Marks
i) It's common for me to spend hours cramming the night before an exam.
ii) If I dedicate as much time as I want to my social life, I don't have enough time left to focus on my studies, or when I study as much as I need to, I don't have time for my social life.
iii) I often study with the TV or radio turned on.

(OR)

8 a) Understanding the gist and rewrite in your own words: 7 Marks

NEW DELHI – India's 15th Lok Sabha (the lower house of Parliament) passed into history ignominiously this month, following the least productive five years of any Indian parliament in six decades of functioning democracy. With entire sessions lost to opposition disruptions, and with frequent adjournments depriving legislators of time for deliberation, the MPs elected in May 2009 passed fewer bills and spent fewer hours in debate than any of their predecessors. As if that were not bad enough, the final session witnessed new lows in unruly behavior, with microphones broken, scuffles in the well of the house, and a legislator releasing pepper spray to prevent discussion of a bill he opposed. In the latter incident, the Speaker was rushed, choking, from her seat, and three asthmatic MPs were taken to the hospital, prompting the offender to explain that he was acting in self-defense against those who sought to prevent him from engaging in less exotic forms of disruption.

b) Understanding the gist and rewrite in your own words. 7 Marks

Congress leader Shashi Tharoor called for teaching Indian epics 'Mahabharat' and 'Ramayan' in schools for making the younger generation more aware of the past. Speaking at the session, 'Remembering the Raj,' at Jaipur Literary Festival on Sunday, he said Indian texts should be made part of the education system. "Shakespeare is being taught in schools and colleges in India, but there has not been enough emphasis on teaching Kalidasa," he said. Tharoor also took a dig at Prime Minister Narendra Modi and alleged that he was only paying 'lip-service' to Mahatma Gandhi.

Arguing for the inclusion of Indian epics in educational curriculum, he said they should be taught like Greek epics 'Iliad' and 'Odyssey'. "These issues should not be reduced to sectarian politics under secularism" he said, while emphasizing that he was not in favour of injecting any political ideology into education.

UNIT-V

9 a) As Secretary of the following company, write a letter giving the details and asking that either it to be repaired or replaced at their cost. 7 Marks

A month ago A.K. Shyam and Company Limited, 35, Bapuji Nagar, Jaipur, bought a duplicating machine from a firm in Delhi. The machine is not technically good and its functioning is satisfactory.

b) "As the purchase officer of an organization you had ordered 12 dozen bed sheets after examining the samples sent by the whole sale dealer. When the consignment arrives you find neither in texture nor in shades do the sheets conform to the samples you had approved". 7 Marks

Write a claim letter demanding their replacement.

(OR)

10 a) What is the role of Memo in communication process? Prepare a Memo on behalf of your Insurance Company to assist the people affected by the Hudood cyclone. 7 Marks

b) Draft a memo to the faculty of your college asking to conduct the compensatory lecture hours to complete the syllabus 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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

TRANSFORMATION TECHNIQUES AND PARTIAL DIFFERENTIAL EQUATIONS

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

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

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

UNIT-I

1 Obtain half range cosine series for $f(x) = x \sin x$ in $(0, \pi)$. 14 Marks

(OR)

2 Expand $f(x) = 2x - x^2$ in a Fourier cosine series in the interval $0 < x < 4$. 14 Marks

UNIT-II

3 Find the Fourier cosine and sine transform of $f(x) = \begin{cases} 1; & 0 < x < a \\ 0; & x \geq a \end{cases}$. 14 Marks

(OR)

4 a) If the finite Fourier sine transform of $f(x)$ is $\frac{16(-1)^{n-1}}{n^3}$, then find $f(x)$ in $(0, \pi)$. 8 Marks

b) If the finite Fourier cosine transform of $f(x)$ is $\frac{1-\cos n\pi}{n^2\pi^2}$, then find $f(x)$ in $[0, \pi]$. 6 Marks

UNIT-III

5 Evaluate: i) $L^{-1}\left\{\ln\left(1+\frac{1}{s}\right)\right\}$. ii) $L^{-1}\left\{\frac{1}{s^3(s^2+1)}\right\}$. 14 Marks

(OR)

6 Solve $y''+4y'+3y = e^t$ with $y(0) = 0, y'(0) = 2$ by transform method. 14 Marks

UNIT-IV

7 a) Define z – transform of $f(n)$ and from the definition, find the Z-transform of $\left(\frac{1}{2}\right)^n + \left(\frac{1}{3}\right)^n$. 7 Marks

b) Show that $Z(\sin h\, n\theta) = \frac{z \sin h\theta}{z^2 - 2z\cos h\theta + 1}$. 7 Marks

(OR)

8 Using Z-transform, solve $u_{n+2} - 3u_{n+1} + 2u_n = 0$, with $u(0) = 0$ and $u(1)=1$. 14 Marks

UNIT-V

9 a) Solve the linear differential equation $(x^2 - yz)\,p + (y^2 - zx)\,q = z^2 - xy$. 7 Marks

b) Solve the equation $x^2\frac{\partial u}{\partial x} + y^2\frac{\partial u}{\partial y} = 0$ by applying method of separation of variables. 7 Marks

(OR)

10 A string is stretched and fastened to two points l apart. Motion is started by displacing the string into the form $y = k(lx - x^2)$ from which it is released at time t = 0. Find the displacement of any point on the string at a distance of x from one end at a time t. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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

BUILDING MATERIALS AND CONSTRUCTION TECHNOLOGY

[Civil Engineering]

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

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

UNIT-I

1	a)	Explain about the classification of various types of wood used in buildings.	7 Marks
	b)	Explain about the efflorescence in bricks and also efflorescence test.	7 Marks
		(OR)	
2		Briefly explain the tests conducted on bricks for their suitability for construction work.	14 Marks

UNIT-II

3		Distinguish the tests conducted on cement to find its properties.	14 Marks
		(OR)	
4		Discuss about any four types of cement and their applications.	14 Marks

UNIT-III

5	a)	Write short notes about properties and uses of asbestos.	7 Marks
	b)	Explain briefly about ceramics.	7 Marks
		(OR)	
6	a)	Differentiate between cast and wrought iron.	7 Marks
	b)	Explain briefly about reinforcing steel bars used in construction.	7 Marks

UNIT-IV

7		Explain about different types of roofs with the help of sketches.	14 Marks
		(OR)	
8		Write short notes on: i) Coupled roof ii) Trussed roof. iii) King and queen post trusses.	14 Marks

UNIT-V

9		Discuss briefly about different types of paint.	14 Marks
		(OR)	
10	a)	Explain the procedure for painting of new and old wood surface.	7 Marks
	b)	Explain about white and colour washing.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

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

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

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

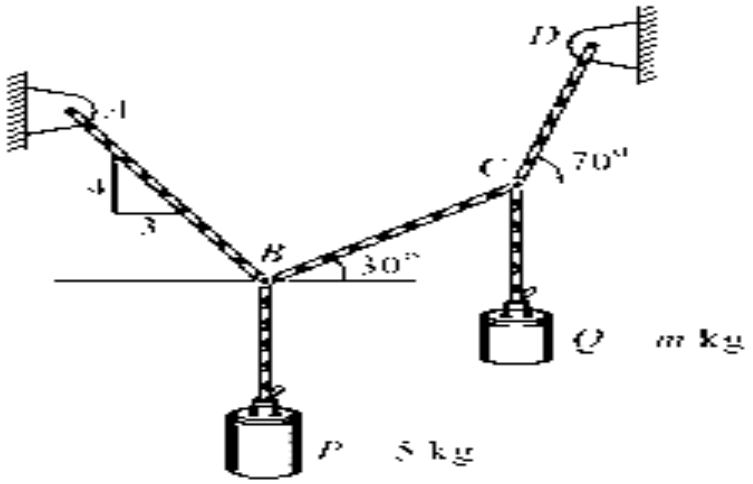
Answer One Question from each Unit.
All questions carry equal marks.

UNIT-I

1 a) Define force. What are its characteristics? Explain with suitable sketch. 4 Marks

b) Two forces A and B are acting at an angle **θ**. Their resultant 'R' will make an angle **α** with the force A, determine the value of **cos α**. 3 Marks

c) Block P = 5kg and block Q of mass **m** kg is suspended through the chord is in the equilibrium position as shown in figure. Determine the mass of block Q. 7 Marks

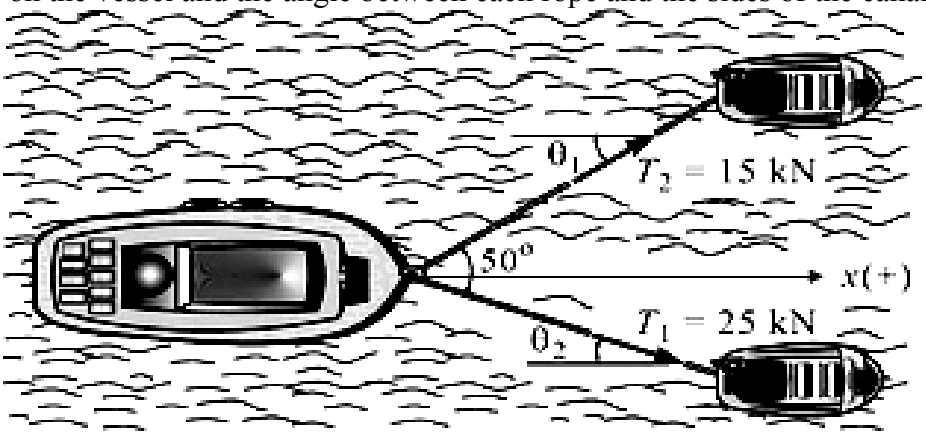


(OR)

2 a) State and explain parallelogram law of forces with a neat sketch. 4 Marks

b) The resultant of two forces P and Q is R. If Q is doubled, the new resultant is perpendicular to P. Prove that Q = R. 3 Marks

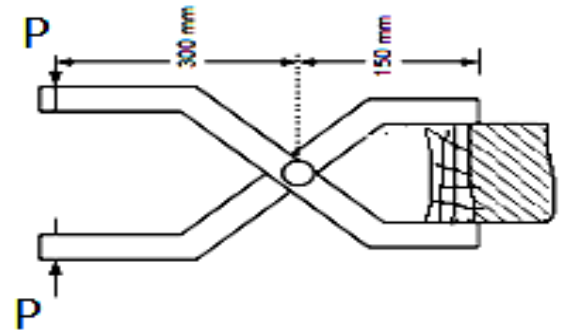
c) Two boats on the opposite banks of a canal pull a vessel moving parallel to the banks by means of two horizontal ropes as shown in figure. Find the resultant pull on the vessel and the angle between each rope and the sides of the canal. 7 Marks



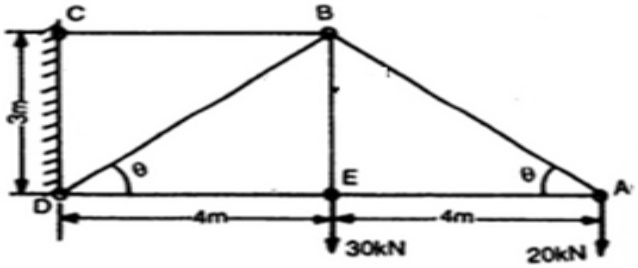
UNIT-II

3 a) State and explain Varignon's theorem. 3 Marks

b) The figure shows a pair of pin jointed gripper tongs holding an object, if the force applied at XX is P. If the pin joint is assumed to be frictionless, calculate the reaction force at the object. 3 Marks



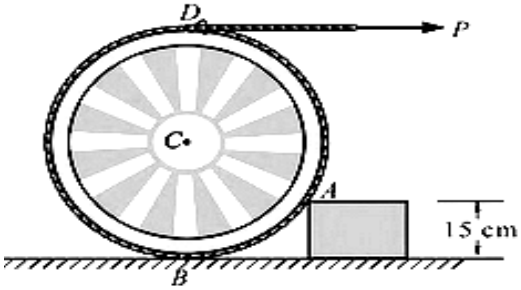
c) Compute the forces in all the members of the cantilever truss as shown in figure and tabulate the magnitude along with their nature. 8 Marks



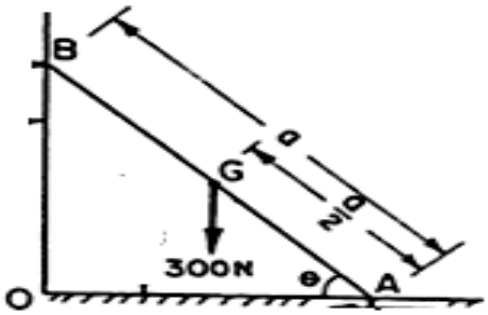
(OR)

4 a) When do you prefer Method of section then Method of joint? Justify. 3 Marks

b) A uniform wheel of 60cm diameter and weighing 1000N rest against a rectangular block 15cm high lying on a horizontal plane as shown in figure. It is to be pulled over the block by a horizontal force **P** applied to the end of a string wound round the circumference of the wheel. Find the force **P** when the wheel is just about to roll over the block. 5 Marks



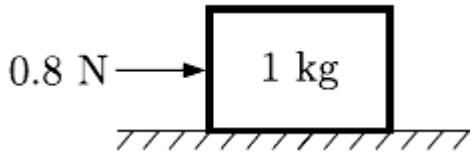
c) A uniform ladder of weight 300N rests against a smooth vertical wall and a rough horizontal floor making an angle of 60^0 with the horizontal. Find the force of friction at the floor using the method of virtual work. 6 Marks



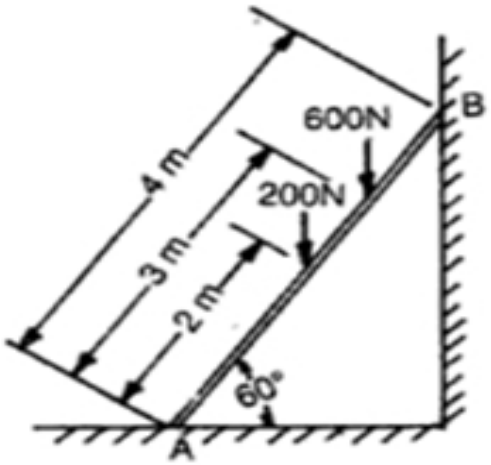
UNIT-III

5 a) Define angle of repose and explain laws of Coulomb friction. 4 Marks

b) A 1kg block is resting on a surface with coefficient of friction $\mu = 0.1$. A force of 0.8 N is applied to the block as shown in the figure. Find the frictional force and justify whether the body will move. 3 Marks



c) Determine the minimum horizontal force to be applied at A to prevent slipping. $\mu = 0.2$ between the wall and ladder, $\mu = 0.3$ between the floor and ladder. The ladder weighs 200N and a man weighing 600N is at 3m from A. 7 Marks



(OR)

6 A uniform ladder of length 5m and weight 250N rests on a horizontal ground and leans against a rough vertical wall. The coefficient of static friction between ladder and the floor is 0.3 and between the ladder and vertical wall is 0.2. When a weight of 900N is placed on the ladder at a distance of 2m from the top of the ladder, the ladder is at the point of sliding. Determine: 14 Marks

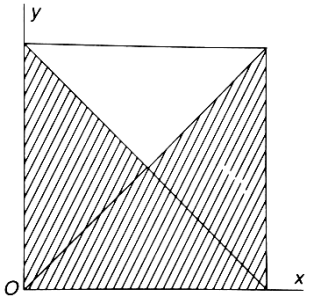
i) The angle made by the ladder with the horizontal.

ii) Reactions at the foot and top of the ladder.

UNIT-IV

7 a) What are the centroidal coordinates of a right angle triangle of base 6cm and height 9cm placed in first quadrants? 3 Marks

b) Locate the centroid of the shaded three-quarters of the area of a square of dimension 'a' as shown in the Figure. 7 Marks

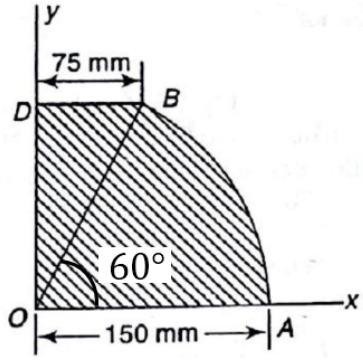


c) Find the polar moment of inertia of an isosceles triangle with base 'b' and altitude 'h' about its apex point A. 4 Marks

(OR)

8 a) State and explain parallel axis theorem with a neat sketch. 3 Marks

b) Locate the centroid C of the shaded area OABD shown in the figure. 7 Marks



c) Find the polar moment of inertia of a square with sides of length "a" with respect to its centroid C. 4 Marks

UNIT-V

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

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

(OR)

10 a) A 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? 7 Marks

b) A body moves along a straight line so that its displacement from a fixed point on the line is given by $\boldsymbol{s = 3t^2 + 2t}$. Find the displacement, velocity and acceleration at the end of $\boldsymbol{t = 3s}$. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

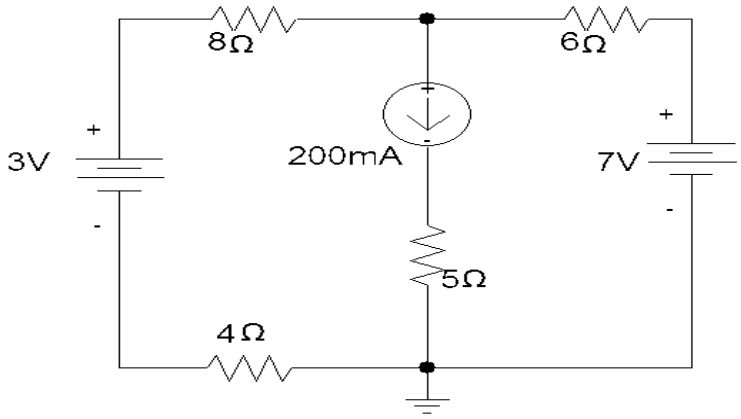
[Civil Engineering, Mechanical Engineering]

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

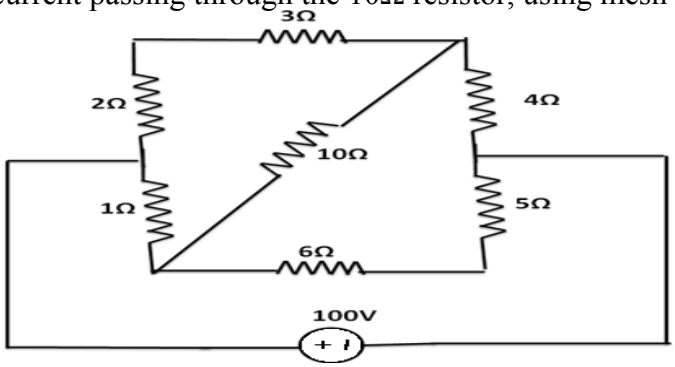
Answer One Question from each Unit.
All questions carry equal marks.

UNIT-I

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

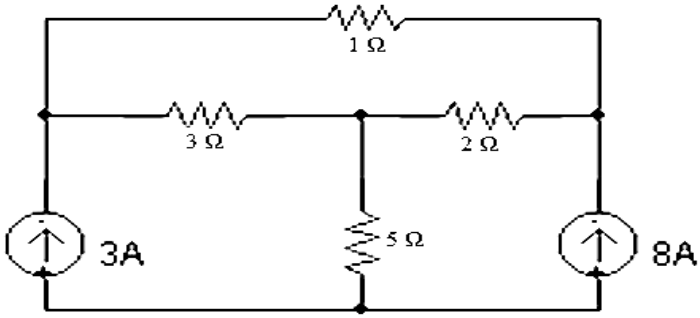


b) Compute the current passing through the 10Ω resistor, using mesh analysis. 7 Marks

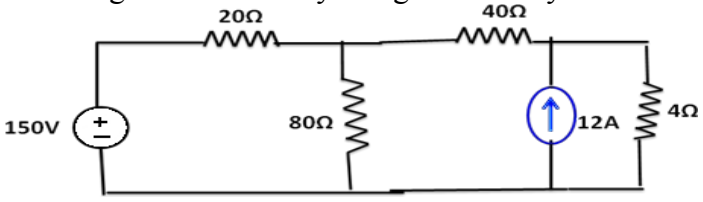


(OR)

2 a) Solve for the current through the 5Ω resistor and the voltage over the 3A source using nodal analysis. 7 Marks

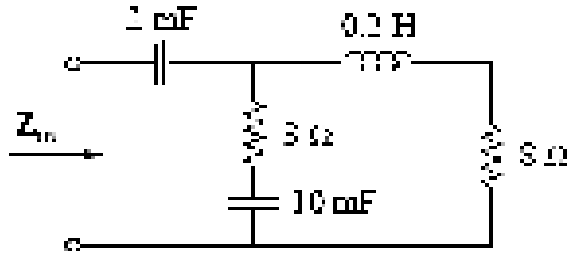


b) Find the current through 4Ω resistor by using mesh analysis. 7 Marks

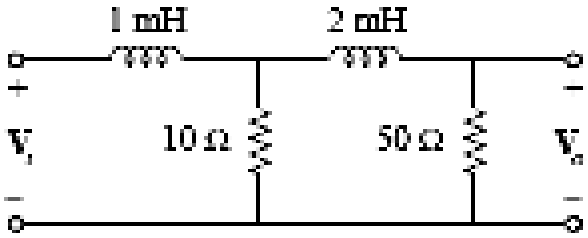


UNIT-II

3 a) Compute the input impedance Z_{in} circuit shown below, assume that the circuit operates at $\omega = 50$ rad / sec. 7 Marks

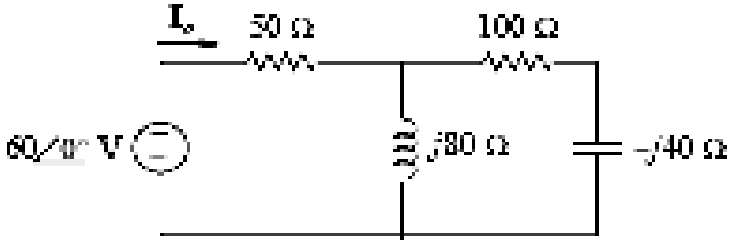


b) Compute the magnitude and phase angle of output voltage V_0, when the circuit was excited by 1V, 5 kHz AC voltage source. 7 Marks

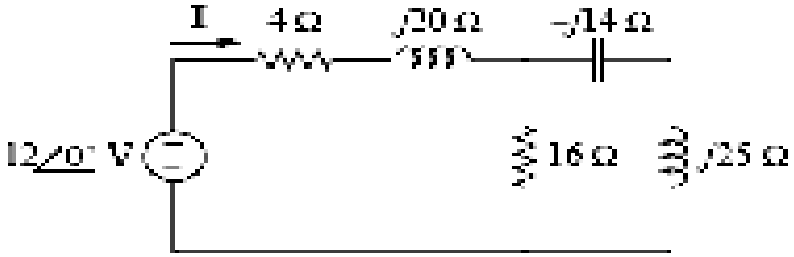


(OR)

4 a) Find the current I_0 in the circuit shown below. 7 Marks



b) Compute the I in the circuit given below. 7 Marks



UNIT-III

5 a) What is an ideal transformer? 4 Marks

b) State the differences between core and shell type transformers. 4 Marks

c) A single phase, 50Hz transformer has 80 turns on the primary winding and 400 turns on the secondary winding. The net cross-sectional area of the core is 200cm². If the primary winding is connected to a 240V, 50Hz supply, Determine: 6 Marks

i) The EMF induced in the secondary winding.

ii) The maximum value of the flux density in the core.

(OR)

6 a) Explain the principle operation of three phase induction motor. 7 Marks

b) With the help of suitable diagrams, explain different methods of excitation of DC generators. 7 Marks

UNIT-IV

7 a) Explain the operation of voltmeter using block diagram. 7 Marks

b) Explain the principle operation of strain gauge using bridge configuration. 7 Marks

(OR)

8 a) How a multi-meter could measures the multiple parameters with wide range? 7 Marks

b) Write the differences between data logger and data acquisition system. 7 Marks

UNIT-V

9 a) Discuss the flow of three currents I_E, I_B and I_C in a forward biased emitter junction and reverse biased collector junction. 7 Marks

b) Draw the V–I characteristics of transistor in common emitter configuration and discuss the salient features. 7 Marks

(OR)

10 a) Derive the relation between the BJT parameters α, β and γ. 7 Marks

b) Draw the circuit diagram of NPN junction transistor in common emitter configuration and describe its characteristics. 7 Marks

CODE No.: 16BT20301 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

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

ENGINEERING MATERIALS

[Mechanical Engineering]

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

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

UNIT-I

1 Define the following properties with examples: 14 Marks
i) Compressive strength. ii) Malleability.
iii) Hardness. iv) Brittleness.

(OR)

2 a) What are the magnetic properties of material? Explain them briefly. 7 Marks
b) Write short notes on ceramic materials and list various advantages of it. 7 Marks

UNIT-II

3 a) Explain comparison method for determination of grain size of a given material with an example. 10 Marks
b) Distinguish between the following: 4 Marks
i) Primitive cell and unit cell.
ii) Crystalline and non-crystalline solids.

(OR)

4 a) Write a short note on: 6 Marks
i) Stacking fault. ii) Twin boundary. iii) Grain boundary.
b) State the main difference between ionic, covalent and metallic bond. 8 Marks

UNIT-III

5 a) Discuss in brief the properties and applications of any four Titanium alloys. 8 Marks
b) Discuss the properties and applications of super alloys. 6 Marks

(OR)

6 a) Discuss the properties and applications of pure copper. Give chemical composition, microstructure and properties of muntz metal and cartridge brass. 8 Marks
b) Discuss properties, microstructure and applications of Grey cast iron. 6 Marks

UNIT-IV

7 a) Distinguish between natural composites and man–made composites with examples. 7 Marks
b) What are Ceramic Matrix Composites? Explain any two CMC's with examples. 7 Marks

(OR)

8 a) What are structural ceramics? Discuss the important structural ceramics with examples and applications. 7 Marks
b) What factors affect the properties of ceramic materials? Explain. 7 Marks

UNIT-V

9 a) Explain any one non destructive testing method in-detail which works on the capillarity principle. Also mention the various steps involved in this method in detail. What are the merits and demerits of this method? 10 Marks
b) State the differences between Izod and Charpy tests. 4 Marks

(OR)

10 Explain Magnetic Particle test with a neat sketch. 14 Marks

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CODE No.: 16BT20401 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

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

ELECTRONIC DEVICES AND CIRCUITS

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

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

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

UNIT-I

1 a) Explain the working of bridge rectifier with neat suitable diagram. 7 Marks

b) Define depletion region at p-n junction. What is the effect of forward and reverse biasing of p-n junction on depletion region? Explain with necessary diagrams. 7 Marks

(OR)

2 a) Derive the expression for I_{dc} and I_{rms} for half-wave rectifier. 8 Marks

b) A half-wave rectifier circuit supplies 100mA DC to a 250Ω load. Find the DC output voltage, PIV rating of a diode and the r.m.s. voltage for the transformer supplying the rectifier. 6 Marks

UNIT-II

3 a) Explain how transistor works as an amplifier. 6 Marks

b) Explain the output characteristics of a transistor in CB configuration. 8 Marks

(OR)

4 a) Compare the performance of BJT as an amplifier in CE, CB and CC configurations. 5 Marks

b) A CE transistor amplifier with voltage divider bias circuit is designed to establish the quiescent point at V_{CE} = 12V, I_C = 2mA and stability factor S ≤ 5.1. If V_{CC} = 24V, V_{BE} = 0.7V, β = 50 and R_C = 4.7KΩ, determine the values of resistors R_E, R_1 and R_2. 9 Marks

UNIT-III

5 a) Explain the concept of Millers theorem and its applications. 8 Marks

b) Compare enhancement and depletion modes of a MOSFET with the help of its characteristics and construction. 6 Marks

(OR)

6 Draw the circuit diagram and small signal equivalent of CB amplifier using accurate h-parameter model. Derive expressions for A_V, A_I, R_i and R_0. 14 Marks

UNIT-IV

7 a) Compare and contrast BJT and FET. 6 Marks

b) Show that the transductance $\mathbf{g_m}$ of a JFET is related to the drain current $\mathbf{I_{DS}}$ by $g_m = \frac{2}{|V_p|}\sqrt{I_{DS}.I_{DSS}}$. 8 Marks

(OR)

8 Sketch the basic structure of an n–channel junction field effect transistor and explain its working with the help of drain characteristics. 14 Marks

UNIT-V

9 What is the photodiode? Explain its principle of operation and applications in detail. 14 Marks

(OR)

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

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CODE No.: 16BT20441 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

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

BASIC ELECTRONIC DEVICES AND CIRCUITS

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

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

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

UNIT-I

1		Write the difference between: i) Static and dynamic resistance of p-n junction diode. ii) Transition and diffusion capacitance. iii) Avalanche and Zener breakdown.	14 Marks
		(OR)	
2	a)	Derive the expression for diffusion capacitance.	8 Marks
	b)	A silicon diode operates at a forward voltage of 0.4V. Calculate the factor by which the current will be multiplied when the temperature is increased from 25 to 150˚C.	6 Marks

UNIT-II

3	a)	With the help of input and output characteristics, explain the operation of BJT in common base configuration.	10 Marks
	b)	What is the need for biasing?	4 Marks
		(OR)	
4	a)	Derive the expression for transistor current components.	8 Marks
	b)	Compare CB, CE and CC configuration of a transistor.	6 Marks

UNIT-III

5		Explain the construction of working of enhancement MOSFET and draw the graph for drain and transfer characteristics.	14 Marks
		(OR)	
6		Explain the construction of working of depletion MOSFET and draw the graph for drain and transfer characteristics.	14 Marks

UNIT-IV

7	a)	Draw the different types of feedback circuits.	10 Marks
	b)	Compare negative feedback and positive feedback.	4 Marks
		(OR)	
8	a)	Explain clearly effects of negative feedback.	10 Marks
	b)	An amplifier with stage gain 200 is provided with negative feedback of feedback ratio 0.05. Find the new gain.	4 Marks

UNIT-V

9		Explain the principle of operation and characteristics of Schottky diode.	14 Marks
		(OR)	
10		Explain the construction and working operation of SCR with neat sketches.	14 Marks

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CODE No.: 16BT20541 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

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

FOUNDATIONS OF DATA STRUCTURES

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

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

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

UNIT-I

1		Illustrate radix sort algorithm and sort the following numbers using radix sort. 77, 12, 8, 39, 27, 21, 44, 18, 6, 427, 117, 237, 5671 and 600.	14 Marks
		(OR)	
2		Illustrate quick sort algorithm and identify the behavior of quick sort when input is already sorted.	14 Marks

UNIT-II

3	a)	Enumerate and describe briefly the various applications of stacks and queues.	7 Marks
	b)	Write an algorithm for converting convert given infix expression to postfix expression: **a+b*c+(d*e+f)*g** using a stack .	7 Marks
		(OR)	
4		Explain the relevance of stack implementation with recursive function evaluation.	14 Marks

UNIT-III

5	a)	Write necessary functions to perform all valid operations on linear queue and circular queue implemented using arrays with an example.	7 Marks
	b)	Some of the sorting methods are not suited for use with linked lists. Which ones, and why not? Write linked list version of any sorting algorithm.	7 Marks
		(OR)	
6	a)	What are the advantages of linked implementation of a stack over array implementation?	7 Marks
	b)	Write routines to implement the operations INSERT, DELETE and SEARCH for circular linked lists. What are the running times of your procedures? Illustrate the routines with examples.	7 Marks

UNIT-IV

7		Explain the three standard ways of traversing a binary tree with a recursive algorithm.	14 Marks
		(OR)	
8	a)	Explain the recursive algorithms for creation, deletion, insertion and searching a binary search tree.	7 Marks
	b)	Illustrate constructing an expression tree. Draw a binary tree for the expression **A*B - (C + D)*(P/Q).**	7 Marks

UNIT-V

9	a)	Write the initialization (), find (), insert () routines to implement Separate Chaining Hash table by specifying their running times.	7 Marks
	b)	What is Graph? Can a tree can be Graph? Name various applications of Graphs.	7 Marks
		(OR)	
10		Determine the various Hashing techniques and explain in detail.	14 Marks

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CODE No.: 16BT21201 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

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

OBJECT ORIENTED PROGRAMMING THROUGH C++

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

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

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

UNIT-I

1		Discuss the issues of procedural oriented programming systems with respect to data security. If object oriented programming solves it, then how.	14 Marks

(OR)

2	a)	Describe data types in C++.	7 Marks
	b)	List out all operators available in C++ with examples.	7 Marks

UNIT-II

3	a)	Explain various Looping statements.	7 Marks
	b)	What are the differences that you observe when strings are used in comparison to the character arrays in "C" language? Explain the difference by writing code in "C" language and C++ language to concatenate to variables defined as character arrays.	7 Marks

(OR)

4	a)	Explain break, continue and goto statements with examples.	7 Marks
	b)	What are the rules that are to be complied with when constant functions are to be used and explain the reasons why the constant functions are used using an example.	7 Marks

UNIT-III

5	a)	Write a program for multiplication of two matrices.	7 Marks
	b)	How string manipulation is done in C++? Justify.	7 Marks

(OR)

6	a)	Write a program for Bubble sort algorithm.	7 Marks
	b)	Write a simple program to demonstrate reference and define reference operations.	7 Marks

UNIT-IV

7	a)	How can you assign new memory to a temporary object that gets created when an object is passed by value?	7 Marks
	b)	How are destructors and constructors called when an object of child class is taken and destroyed?	7 Marks

(OR)

8	a)	What is "this" pointer? In how many forms this pointer exists? Explain with references to the member functions and functions that are declared as constant and volatile.	7 Marks
	b)	Write a program to catch an exception through by "new" and "delete" operators and provide a procedure to handle such exceptions.	7 Marks

UNIT-V

9		Explain different types of inheritance with block diagram and an example for each.	14 Marks

(OR)

10	a)	What are copy constructors and why are they required?	7 Marks
	b)	Discuss various ordination points that one can use for random accessing.	7 Marks

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CODE No.: 16BT21501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

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

DIGITAL LOGIC DESIGN

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

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

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

UNIT-I

1 a) The state of a 12-bit register is 010110010111. What is its content if it represents:
   i) three decimal digits in BCD. 3 Marks
   ii) three decimal digits in Excess-3 code. 3 Marks

b) Each of the following arithmetic operations is correct in at least one number system. Determine the bases in each operation:
   i) 41/3 = 13 4 Marks
   ii) 302/20 = 12.1 4 Marks

(OR)

2 a) Perform subtraction on the following unsigned binary numbers using the 2's complement of the subtrahend.
   i) 110100 –1101 4 Marks
   ii) 1100.10 – 111.01 4 Marks

b) Convert the following binary numbers to gray codes:
   i) 1110111 3 Marks
   ii) 101010001 3 Marks

UNIT-II

3 a) Obtain the simplified expression in product of sums for the given Boolean expression. $F(A,B,C,D) = \Pi\ (0,1,2,3,4,10,11)$ 7 Marks

b) Simplify the following Boolean function using K-map. 7 Marks
$F(A, B, C, D) = \Sigma m(3, 4, 13, 15) + \Sigma d(1, 2, 5, 6, 8, 10, 12, 14)$

(OR)

4 Simplify the following expression and implement with two-level NOR gate circuit: 14 Marks
F=Σ(5,6,9,10)

UNIT-III

5 a) Illustrate the operation of BCD adder using neat sketch. 7 Marks

b) Implement the following Boolean function with a 16×1 multiplexer. 7 Marks
$F(A, B, C, D) = \Sigma m(0, 3, 5, 6, 8, 9, 14, 15)$

(OR)

6 a) Draw and explain the operation of a multiplexer. 7 Marks

b) Design a priority encoder of 4-bit. 7 Marks

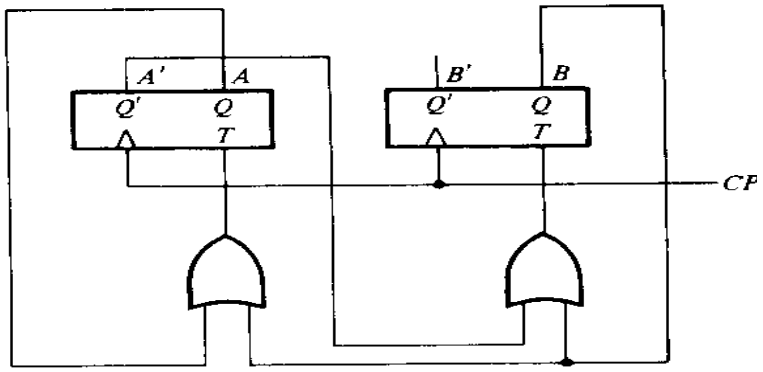
UNIT-IV

7 a) Explain the operation of a 4 bit shift register. 7 Marks

b) Explain the operation of a Johnson counter. 7 Marks

(OR)

8 a) Derive the state table and state diagram of the sequential circuit. 8 Marks



b) Illustrate the importance of state reduction and state assignment methods in design of sequential logic circuits. 6 Marks

UNIT-V

9 a) Compare the features of PROM, PLA and PAL. 7 Marks

b) Illustrate the concept of memory decoding in detail. 7 Marks

(OR)

10 a) Illustrate about various types of ROM. 6 Marks

b) Design a BCD to Excess-3 code converter using ROM. 8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Supplementary Examinations December - 2017

ENGINEERING CHEMISTRY

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Explain Nalgonda method used for defluoridation of water and list out the merits and demerits of various deflouridation methods. 7 Marks
   b) What is the threshold level of fluoride in ground water? Discuss the adverse effects of fluorides on human health. 7 Marks

(OR)

2. What is the principle of EDTA method? Estimate the hardness of water by EDTA method. 14 Marks

UNIT-II

3. a) Discuss the role of polymers as water softeners with one example. 7 Marks
   b) Discuss the properties and classification of Bio-degradable polymers. 7 Marks

(OR)

4. Define doped conducting polymer. Illustrate p-doped and n-doped conducting polymers. 14 Marks

UNIT-III

5. a) Explain wet chemical synthesis of nanomaterials. 7 Marks
   b) Discuss the applications of GREEN CHEMISTRY in science and technology. 7 Marks

(OR)

6. a) Explain the synthesis of Bio-diesel. 7 Marks
   b) Explain sol-gel synthesis of nanomaterials. 7 Marks

UNIT-IV

7. a) Based on the chemistry that takes place, explain with neat diagram why Pb-Acid battery is called “secondary storage battery”. 8 Marks
   b) Explain the difference between a rechargeable battery and one that must be discarded. Use a Ni-Cad battery and an dry cell as examples. 6 Marks

(OR)

8. Define Battery. Explain lithium polymer batteries and mention their applications. 14 Marks

UNIT-V

9. a) Under what situations greases are used? What are the main functions of soap in grease? 7 Marks
   b) Explain: i) cloud and pour points ii) flash point and fire point 7 Marks

(OR)

10. Distinguish between Galvanic corrosion and Concentration cell corrosion. Also explain the mechanism involved in these corrosion. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Supplementary Examinations December - 2017

ENGINEERING PHYSICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	With the help of suitable diagram, explain the principle, construction and working of an optical fiber as a wave guide.	10 Marks
	b)	In an optical fiber, the material has refractive indices of core and cladding of 1.6 and 1.3 respectively. What is the value of critical angle? Also calculate the acceptance angle and acceptance cone.	4 Marks

(OR)

2.	a)	Define and differentiate Spontaneous, Stimulated Emission of radiation.	6 Marks
	b)	Discuss the principle and working of gas laser with energy level diagram.	8 Marks

UNIT-II

3.	a)	Formulate Eigen function and Eigen values for the particle in one dimensional potential box of length 'L'.	12 Marks
	b)	Find the energy of an electron in second energy level. (L = 3**A**º).	2 Marks

(OR)

4.	a)	Describe the Fermi-Dirac distribution function of electrons. Explain the effect of temperature on the distribution function.	8 Marks
	b)	Classify the conductors, semiconductors and insulators based on band theory of solids.	6 Marks

UNIT-III

5.	a)	Explain direct and indirect band gap semi-conducting materials.	6 Marks
	b)	What is the principle of LED? Describe the construction and working of LED.	8 Marks

(OR)

6.	a)	Define drift and diffusion currents in a semiconductor. Derive expression for drift and diffusion currents in semiconductor.	9 Marks
	b)	Deduce the Einstein relation in semiconductors.	5 Marks

UNIT-IV

7.	a)	Explain the tern critical magnetic field in a superconductor. How does the critical magnetic field vary with temperature in Type-I and Type-II superconductors?	10 Marks
	b)	Explain tunneling in superconductors.	4 Marks

(OR)

8.	a)	Describe the requirements of an acoustically good hall.	6 Marks
	b)	Explain the parameters to judge the quality of acoustics of a room.	8 Marks

UNIT-V

9. a) How is nano-world uniquely different? 6 Marks
   b) Discuss the synthesis of nano materials by pulsed laser deposition method with appropriate figures. Discuss its advantages. 8 Marks

(OR)

10. a) Discuss important concerns of material scientists in the Nano science. 6 Marks
    b) Discuss the mechanical properties of nano materials. How can these be used in different applications? 8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Supplementary Examinations December - 2017

TECHNICAL ENGLISH

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) What is the importance of acquiring LSRW skills in technical education? 7 Marks
   b) How can the speaking skills be developed from reading, writing and listening skills? 7 Marks

(OR)

2. Categorize the various modes of communication. 14 Marks

UNIT-II

3. Define active listening and distinguish common myths about listening. 14 Marks

(OR)

4. Identify the barriers to effective listening and choose the ways to overcome them. 14 Marks

UNIT-III

5. a) Define the following terms with suitable examples. 7 Marks
   i) Kinesics. ii) Proxemics. iii) Haptics.
   iv) Chronemics. v) Facial expressions. vi) Eye contact.
   vii) Self image.
   b) **Define cross cultural communication and discuss the following with regard to it.** 7 Marks
   i) business opportunities ii) job opportunities
   iii) sharing of views and ideas iv) talent improvisation
   v) understanding the diverse markets vi) educational opportunities
   vii) improving human relationships viii) globalization.

(OR)

6. a) **Mark the stress for the given words:** 7 Marks
   i) Water; ii) people; iii) potato; iv) before; v) begin; vi) physician; vii) judicial; viii) democracy; ix) geography; x) examine; xi) cassette; xii) agree; xiii) Siamese.
   b) **Mark the intonation for the given sentences.** 7 Marks
   i) This time the film was <u>really</u> good.
   ii) **Did you <u>really</u> like the film.**
   iii) Do you go there often?
   iv) Where's my purse? You were here.
   v) Have you washed the dishes?
   vi) Is this your camera?
   vii) Are you thirsty?

UNIT-IV

7. List the various purposes of reading and compare the guidelines for reading general and journal articles. 14 Marks

(OR)

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

UNIT-V

9. a) You are being sent on a one month work assignment to Mumbai. You need a place to stay while you are there. Write a letter to the Samson Real Estate Agency. In your letter: 7 Marks
   • explain the situation
   • describe the kind of accommodation you would like
   • provide the dates you will need it.

   b) Write a business letter to the Jones Crockery limited shipping the necessary articles for a restaurant to be established by you in your city. Ensure the transaction regarding the mode of payment, discount, and delivery and so on. 7 Marks

(OR)

10. Elaborate Technical writing and write the salient features based on its importance and characteristics. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Supplementary Examinations December – 2017

TRANSFORMATION TECHNIQUES AND PARTIAL DIFFERENTIAL EQUATIONS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Develop half range sine series for the function $f(x) = x$ range $0 < x < 2$. 14 Marks

(OR)

2. Define Fourier series of f(x) in the interval $(-\pi, \pi)$ and develop the same for $f(x) = \begin{cases} -\pi, & -\pi < x < 0 \\ x, & 0 < x < \pi \end{cases}$ and hence deduce that $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \ldots = \frac{\pi^2}{8}$. 14 Marks

UNIT-II

3. State Fourier transform of f(x) and develop a Fourier transform of $f(x) = \begin{cases} 1 & for \ |x| < 1 \\ 0 & for \ |x| > 1 \end{cases}$ and hence evaluate $\int_0^\infty \frac{\sin x}{x}\, dx$. 14 Marks

(OR)

4. Find the Fourier sine transform of $\mathbf{e}^{-|x|}$ hence evaluate $\int_0^\infty \frac{x \sin mx}{a^2 + x^2} dx$. 14 Marks

UNIT-III

5. a) Find $L^{-1}\left(\frac{1}{(s+2)^2 + 16}\right)$ and $L^{-1}\left(\frac{2s+3}{s^2 + 2s + 2}\right)$. 7 Marks

   b) Using Laplace Transform , solve $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} - 3y = \sin t$, $y(0) = y'(0) = 0$ when $t = 0$. 7 Marks

(OR)

6. a) Find L (f(t)) where f(t)= $\begin{cases} \sin t, & 0 < t < \pi \\ 0, & \pi < t < 2\pi \end{cases}$. 7 Marks

   b) Find (i) $L^{-1}\left(\frac{s-2}{s^2 - 5s + 6}\right)$ and (ii) $L^{-1}\left(\frac{1}{s(s+1)(s+2)}\right)$ 7 Marks

UNIT-IV

7. Find inverse Z-transform of $\frac{2z(z^2 - 1)}{(z^2 + 1)^2}$. 14 Marks

(OR)

8. a) State and prove initial value theorem. 7 Marks

   b) State shifting principle of z - transform and applying it find $Z\left[(n+1)^2\right]$ given that $Z(n^2) = \frac{z^2 + z}{(z - 1)^3}$. 7 Marks

UNIT-V

9. Find the differential equation whose general solution is given by $u(x,t) = f(x-ct) + g(x+ct)$, where f and g are arbitrary twice differentiable functions. 14 Marks

(OR)

10. Apply method of separation of variables to get the solution of the partial differential equation $3\frac{\partial u}{\partial x} - 2\frac{\partial y}{\partial y} = 0,\ u(x,0) = 4e^{-x}$. 14 Marks

CODE No.:16BT20101 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Supplementary Examinations December - 2017

BUILDING MATERIALS AND CONSTRUCTION TECHNOLOGY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain about the classification of stones.	10 Marks
	b)	Explain about dressing of stones.	4 Marks
		(OR)	
2.	a)	How are clay tiles manufactured? Explain its properties and applications.	9 Marks
	b)	Write a brief note on latest developments in the field of manufacturing of tiles.	5 Marks

UNIT-II

3.		Describe the operations involved in the manufacture of lime.	14 Marks
		(OR)	
4.		Explain about the manufacturing process of cement.	14 Marks

UNIT-III

5.	a)	Discuss the ceramic materials in detail.	7 Marks
	b)	Bring out the latest developments in the field of manufacturing of glass and aluminium.	7 Marks
		(OR)	
6.		List and explain the market forms of steel.	14 Marks

UNIT-IV

7.	a)	Write a note on pile foundation and its types.	7 Marks
	b)	Describe the process of underpinning with relevant uses.	7 Marks
		(OR)	
8.	a)	Brief about different types of footings.	7 Marks
	b)	Distinguish between rubble and ashlar masonry.	7 Marks

UNIT-V

9.	a)	Explain the constituents of paints and list the types of paints.	7 Marks
	b)	Explain: i) Ceramic Flooring. ii) Marble flooring.	7 Marks
		(OR)	
10.	a)	State the requirements of a good form work. Draw the neat sketch of formwork for an RCC column and indicate parts.	7 Marks
	b)	Briefly describe the properties and uses of sound insulating materials.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech II Semester (SVEC16) Supplementary Examinations December - 2017

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

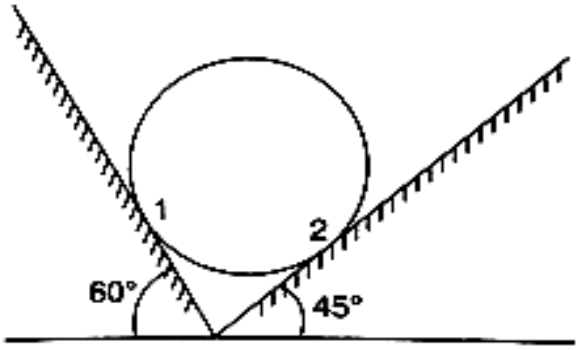
1. a) Define and explain the following terms: 7 Marks
   i) Coplanar and non-coplanar forces.
   ii) Collinear and concurrent forces.
   iii) Parallel and non-parallel forces.

   b) Two forces equal to 2P and P respectively act on a particle. If first force be doubled and the second increased by 12N the direction of the resultant is unaltered. Find the value of P. 7 Marks

(OR)

2. a) Explain in detail the method of finding resultant in magnitude and direction of three or more forces acting at a point by analytical method. 7 Marks

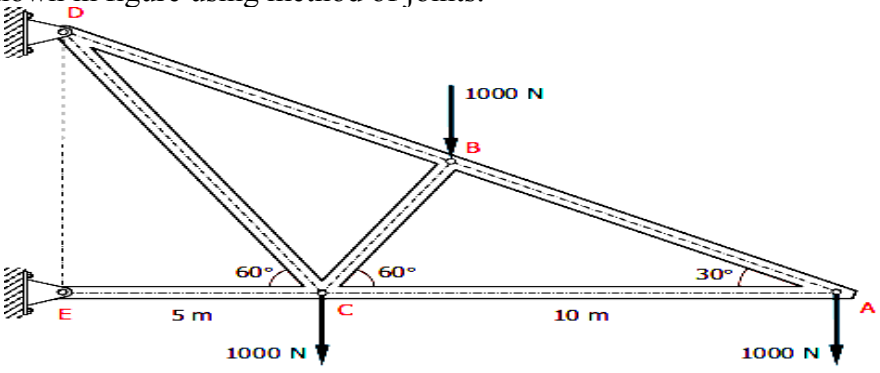
   b) A 200 N sphere is resting in a trough as shown in figure. Determine the reactions developed at contact surfaces. Assume all contact surfaces are smooth. 7 Marks



UNIT-II

3. a) What is a frame? Distinguish perfect frame and imperfect frame? List the assumptions made in designing a frame. 7 Marks

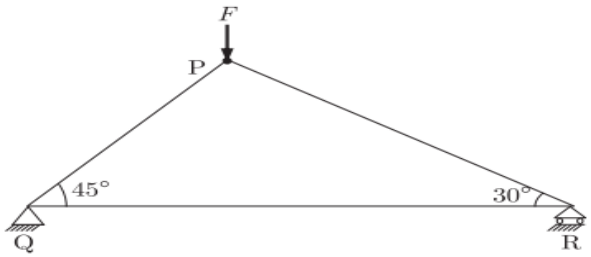
   b) Determine the forces in all members of the cantilever truss hinged at D and E as shown in figure using method of joints. 7 Marks



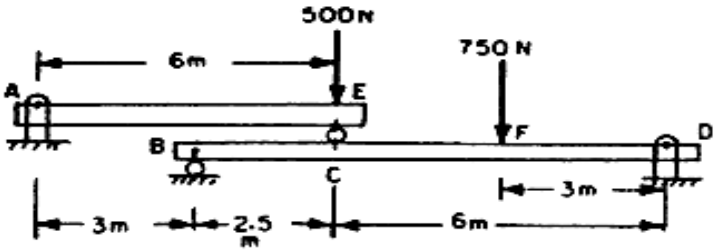
(OR)

4. a) Explain concept of virtual work with suitable example. 3 Marks

b) Consider a truss PQR loaded at P with a force F as shown in the figure. Find the tension in the member QR. 4 Marks

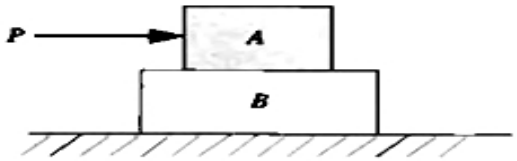


c) Determine the reactions at rollers B and C of the beam shown in figure using the method of virtual work. 7 Marks



UNIT-III

5. a) The coefficient of friction between a copper block A and an aluminum block B is 0.3, and between the block B and the floor is 0.2. The weight of block A is 30 N and of block B is 20 N as shown in given figure. What force P will cause the motion of block A to impend? 7 Marks



b) Define friction and explain its types with examples. 7 Marks

(OR)

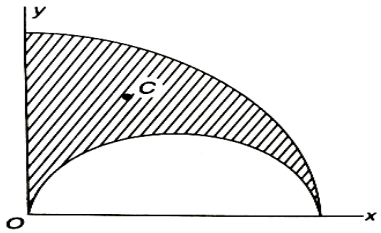
6. a) What is friction? Explain how friction is both desirable and undesirable in engineering applications. Also state the laws of static and dynamic friction. 7 Marks

b) A body of weight 100 N is placed on a rough horizontal plane. To just move the body on the horizontal plane, a pull of 25 N inclined at 20° to the horizontal plane is required. Find the coefficient of friction. 7 Marks

UNIT-IV

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

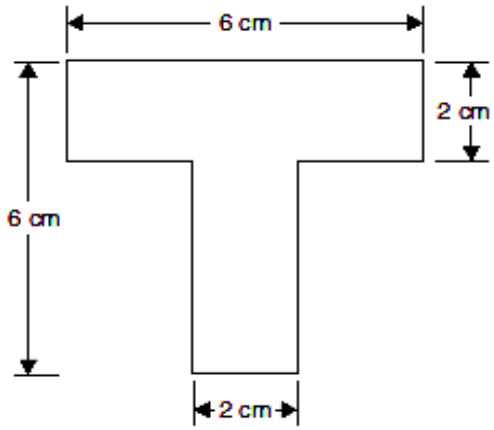
b) Locate the centroid C of the shaded area obtained by cutting a semicircle of diameter 'a' from the quadrant of a circle of radius a as shown in the figure. 7 Marks



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

(OR)

8. Find the area moment of inertia about centroidal axes of the plane area shown in figure. 14 Marks



UNIT-V

9. a) (i) State impulse-momenutum priniciple. 4 Marks
(ii) A bullet of mass 1kg if fired with a velocity of ***u*** m/s from a gun of mass 10kg. Find the ratio of kinetic energies of bullet and gun.

b) A vehicle of mass 600 kg and moving with a velocity of 12 m/s strikes another vehicle of mass 400 kg, moving at 9 m/s in the same direction. Both the vehicles get coupled together due to impact. Find the common velocity with which the two vehicles will move. Also find the loss of kinetic energy due to impact. 3 Marks

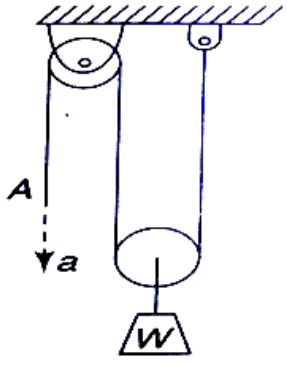
c) A car of mass 1500 kg is uniformly accelerated. Its speed increases from 50kmph to 75kmph after travelling a distance of 200m. The resistance to the motion of the car is 0.2% of the weight of the car. Determine (i) the maximum power required.(ii) the power required to maintain a constant speed of 75kmph. 7 Marks

(OR)

10. a) i) What is the relation between angular velocity and r.p.m. of a body? 4 Marks
ii) A wheel of mass 3.0. Tons are running at a speed of 108 kmph. Find its kinetic energy, if the resistance to the motion is 200 N.

b) A body starting from rest moves in a straight line with its equation of motion being $\mathbf{S=2t^3-3t^2+2t+1}$ where, **S** is displacement in ***m*** and **t** is time in ***s***. What is its acceleration after one second? 3 Marks

c) A weight W= 4450N is supported in a vertical plane by a string and pulleys arranged as shown in figure. If the free end A of the string is pulled vertically downward with constant acceleration $\mathbf{a = 1.8\ m/s^2}$, find the tension S in the string. Neglect friction in the pulleys. 7 Marks



CODE No.:16BT20241 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Supplementary Examinations December - 2017

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

[Civil Engineering, Mechanical Engineering]

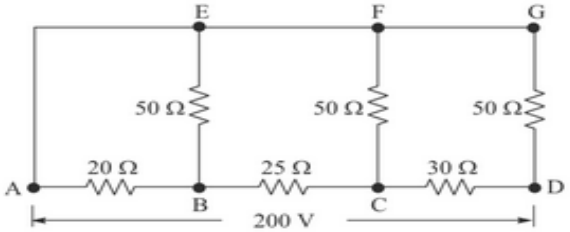
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

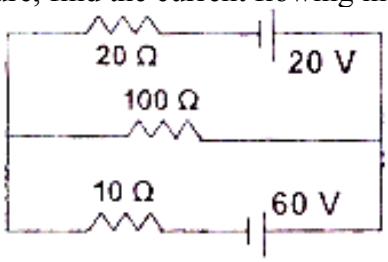
1. a) Obtain the expressions for star-delta equivalence of resistive network. 6 Marks

   b) The circuit shown in figure, find the current in each resistor. 8 Marks



(OR)

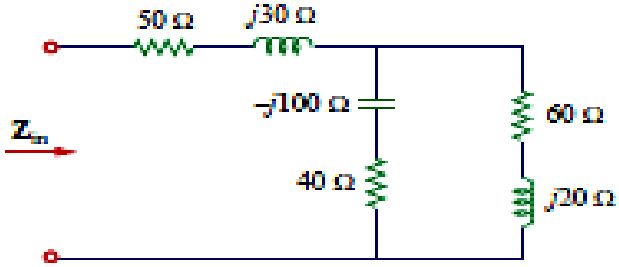
2. a) The circuit shown in figure, find the current flowing in each resistor. 6 Marks



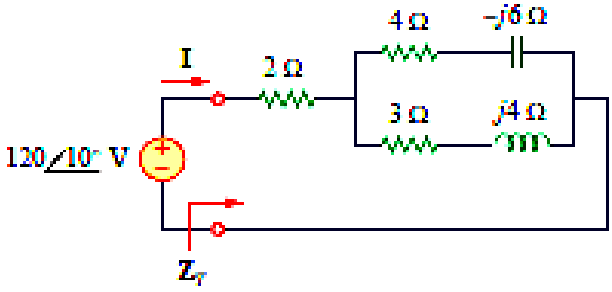
   b) Define the following terms: 8 Marks
   i) Current ii) Potential difference iii) Power iv) Energy

UNIT-II

3. a) Compute the Z_{in}, for the circuit shown below. 7 Marks



   b) Determine the Z_T and I for the circuit shown below. 7 Marks



(OR)

4. A capacitor of 15 μF is connected in series with a non-inductive resistance of 100Ω across a 100V, 50Hz supply. Find 14 Marks
   i) Capacitive reactance ii) Impedance
   iii) Current iv) Power factor
   v) Phase angle vi) Voltages across R and C
   vii) Power dissipated.
   Obtain expressions for voltage and current. Also sketch the phasor and vector diagrams.

UNIT-III

5. a) A 4 pole, lap-wound DC generator has 100 slots and 12 conductors / slot. The flux/pole is 0.5Wb. Determine the induced **emf** in the armature if it is rotating at 1500 r.p.m. 7 Marks
   b) Derive the torque equation of a DC motor. 7 Marks

(OR)

6. With a neat sketch, explain the construction of a DC generator. 14 Marks

UNIT-IV

7. a) Describe the characteristics of transducers. 7 Marks
   b) Describe the construction and principle working of thermocouples. 7 Marks

(OR)

8. Show that strain gauge factor is $\mathbf{G_f = 1+2}\boldsymbol{\nu}$. 14 Marks

UNIT-V

9. Explain the principle and operation of full wave rectifier and also give the advantages and disadvantages of full wave rectifier. 14 Marks

(OR)

10. a) State the need for biasing. Explain. 6 Marks
    b) How a PNP junctions are formed? Explain how the transistor acts as switch. 8 Marks

CODE No.:16BT20301 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Supplementary Examinations December - 2017

ENGINEERING MATERIALS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Write the various thermal properties and explain them.	7 Marks
	b)	Explain the relation between thermal conductivity and electrical conductivity.	7 Marks
		(OR)	
2.	a)	List out various applications of engineering materials with relevant examples.	7 Marks
	b)	What are the physical properties of material? Explain any four properties.	7 Marks

UNIT-II

3.	a)	Explain the different methods for calculation of grain size.	14 Marks
		(OR)	
4.		Show the packing efficiency of an FCC crystal is 0.74.	14 Marks

UNIT-III

5.	a)	Explain the microstructure and applications of White Cast Iron.	7 Marks
	b)	Discuss gun metal giving composition micro structure, properties and applications.	7 Marks
		(OR)	
6.		Write the properties and applications of copper and its alloys.	14 Marks

UNIT-IV

7.	a)	Discuss the advantages and limitations of PMC.	7 Marks
	b)	What are the important characteristics of ceramics?	7 Marks
		(OR)	
8.	a)	Discuss the advantages and limitations of GFRP.	7 Marks
	b)	Define composite materials. What unique properties have they over the conventional materials?	7 Marks

UNIT-V

9.	a)	What is the principle of Eddy Current inspection? Explain the various steps involved in this method in detail. What are the merits and demerits of this method?	10 Marks
	b)	Why magnaflux method is used in both the longitudinal and transverse directions for testing the component?	4 Marks
		(OR)	
10.	a)	Explain any one non destructive testing method in-detail which works with the X-rays. Also mention the various steps involved in this method in detail. What are the merits and demerits of this method?	8 Marks
	b)	State the limitations of the following methods of inspection: i) Visual test. ii) Magnaflux test.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Supplementary Examinations December - 2017

ELECTRONIC DEVICES AND CIRCUITS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Determine the dynamic forward and reverse resistance of p-n junction silicon diode when the applied voltage is 0.25V at T=3000K with given I_0=2 μA. 7 Marks
   b) Explain the concept of diode capacitance. Derive expression for transition capacitance. 7 Marks

(OR)

2. Derive the expression for the ripple factor of π-Section filter when used with a Half-wave rectifier. Make necessary approximations. 14 Marks

UNIT-II

3. a) Explain the basic construction and operation of common emitter characteristics of BJT and mention its applications. 7 Marks
   b) In a silicon transistor circuit with a fixed bias, V_{CC} = 9V, R_C = 3KΩ, R_B = 8KΩ, β = 50, V_{BE} = 0.7V. Draw the **d.c** load line and determine operating point. What is stability factor? 7 Marks

(OR)

4. Draw the self bias circuit and obtain the expression for the stability factor. Discuss the advantages and disadvantages of self biasing. 14 Marks

UNIT-III

5. a) Give the approximate h-parameter conversion formulae for CB and CE configuration in terms of CC. 8 Marks
   b) Give the advantages of h-parameter analysis. 6 Marks

(OR)

6. a) Explain the set-up for measurement of h-parameters. 4 Marks
   b) Give the complete analysis of CC transistor amplifier circuit using h-parameters and derive expressions for the current gain, voltage gain, input impedance and output admittance. 10 Marks

UNIT-IV

7. a) A Common Source FET amplifier circuit with un bypassed R_S has the following circuit parameters: R_d = 15K, R_S = 0.5K, R_g = 1M, r_d = 5K, g_m= 5mS and V_{DD} = 20 V. Determine A_V and R_O. 10 Marks
   b) Derive the expression for trans conductance of MOSFET. 4 Marks

(OR)

8. Draw the small-signal model of common drain FET amplifier. Derive expressions for voltage gain and output resistance. 14 Marks

UNIT-V

9. Explain Schottky diode with necessary sketches. 14 Marks

(OR)

10. Explain the operation of tunnel diode and draw its equivalent circuit. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Supplementary Examinations December - 2017

BASIC ELECTRONIC DEVICES AND CIRCUITS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Draw the circuit of a half-wave-rectifier and find out the ripple factor, percentage regulation, efficiency and PIV. 14 Marks

(OR)

2. a) The reverse saturation current of a silicon p-n junction diode at an operating temperature of 27°C is 50nA. Estimate the dynamic forward and reverse resistances of the diode for applied voltages of 0.8V and −0.4V respectively. 8 Marks
   b) Distinguish between drift and diffusion current in a semiconductor. State continuity equation. 6 Marks

UNIT-II

3. a) With a neat diagram, explain the various current components in an NPN bipolar junction transistor and hence derive general equation for collector current, I_C. 8 Marks
   b) Describe the significance of the terms **'α'** and **'β'**. Establish a relation between them. 6 Marks

(OR)

4. a) Explain the methods of stabilising Q point of a transistor. 10 Marks
   b) A transistor has **α** = 0.98. If emitter current of the transistor is 1mA. Determine the base current and gain factor **β**. 4 Marks

UNIT-III

5. a) Draw the small signal model of JFET. 10 Marks
   b) A FET amplifier in the common source configuration uses a load resistance of 250KΩ and the transconductance is 0.5mA/V. What is the voltage gain of the amplifier given drain resistance is 200KΩ? 4 Marks

(OR)

6. a) A self biased p – channel JFET has a pinch – off voltage of V_P = 5V and I_{DSS} = 12mA. The supply voltage is 12V. Determine the values of R_D and R_S so that I_D = 5mA and V_{DS} = 6V. 10 Marks
   b) Sketch the drain characteristics of MOSFET for different values of V_{GS} and mark different regions of operation. 4 Marks

UNIT-IV

7. a) Draw the circuit of Colpitts oscillator and explain its working. Derive the expression for frequency of oscillation. 10 Marks
   b) In Colpitts oscillator C_1=0.16μF, L =15.8mH and its frequency of oscillation is 10 KHz, calculate the value of capacitor C_2. 4 Marks

(OR)

8. a) Draw the circuit of crystal oscillator and explain its working. Derive the 10 Marks

expression for frequency of oscillation.

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

UNIT-V

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

(OR)

10. Explain the principle of operation and characteristics of Varactor diode. 14 Marks

CODE No.:16BT20541 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech II Semester (SVEC16) Supplementary Examinations December - 2017

FOUNDATIONS OF DATA STRUCTURES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Design shell sort routine using Shell's increments. Trace shell sort after each pass for an array **A = <81, 94, 11, 96, 12, 35, 17, 95, 28, 58, 41, 75, 15>.** 7 Marks
   b) Trace the insertion sort algorithm with the given set of 6 numbers 44, 8, 74, 51, 32, 21 by showing the passes and position moved. Derive the worst case and best case running time of insertion sort. What is the running time of insertion sort if all elements are equal? 7 Marks

(OR)

2. Illustrate shell sort algorithm with an example. 14 Marks

UNIT-II

3. a) Discuss about the exceptional conditions of stack. 7 Marks
   b) List out the drawback of linear queue. How do overcome it? Explain. 7 Marks

(OR)

4. a) Distinguish between array, stack and queue. 5 Marks
   b) What do you think about stack? Give some applications of stack. 5 Marks
   c) What do you think about queue? Give its applications. 4 Marks

UNIT-III

5. a) Differentiate singly linked list and circularly linked list. Outline an algorithm to delete an $\mathbf{i^{th}}$ node on a linked list. Be sure that such a node exists. 7 Marks
   b) Write an algorithm to count the number of nodes and print out the elements in a singly linked list. 7 Marks

(OR)

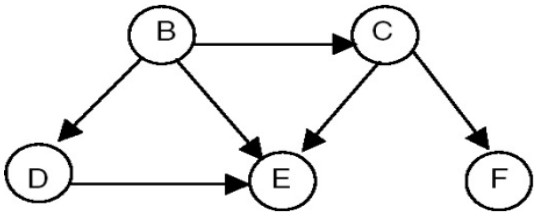
6. a) Define header node with an example. 7 Marks
   b) Write a C function to insert the element at the end of the list. 7 Marks

UNIT-IV

7. What is a BST? Explain with suitable algorithm for inserting a node at different instances. Illustrate with suitable example. 14 Marks

(OR)

8. a) Develop an algorithm for counting the number of left external nodes in a binary tree, using the Binary tree ADT. 7 Marks
   b) Write a program to read a graph into adjacency lists using linked lists. Test the program for topological sort for the following DAG: 7 Marks



UNIT-V

9. Write the following C routines to implement Separate Chaining Hash Table. 14 Marks
   i) Initialization. ii) Find. iii) Insert. iv) Display.

(OR)

10. Write the following C routines to implement Open Addressing Hash Table. 14 Marks
    i) Initialization. ii) Find. iii) Insert. iv) Display.

CODE No.:16BT21201 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech II Semester (SVEC16) Supplementary Examinations December - 2017

OBJECT ORIENTED PROGRAMMING THROUGH C++

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Write a program to find roots of quadratic equation.	7 Marks
	b)	What is variable? Explain about declaration and initialization of variables with suitable examples.	7 Marks

(OR)

2.	a)	Compare and contrast C and C++ through 3 similarities and 3 dissimilarities citing the example.	7 Marks
	b)	What is inheritance? Are the private variables of parent class can be inherited into a child class? Explain with an example.	7 Marks

UNIT-II

3.		How nested conditional and loop statements are executed in C++? Explain with a suitable example.	14 Marks

(OR)

4.		Write a function using reference variables as arguments to swap the values of a pair of integers.	14 Marks

UNIT-III

5.		Explain the concept of multi-dimensional arrays in C++ with an example.	14 Marks

(OR)

6.		Explain the use of constant pointers and pointers to constant with an example.	14 Marks

UNIT-IV

7.		Write a C++ program to add and multiply two complex numbers. Initialize the variables through writing constructor. Implement add and multiply operations using overloaded + and * operators.	14 Marks

(OR)

8.	a)	Write a program that assigns the memory using the copy constructors every time an object is created while at the same time initialization of the newly created object is undertaken using some other object of the same type.	7 Marks
	b)	What rules do you follow when inserters and extractors are overloaded with reference to a class in which they are defined.	7 Marks

UNIT-V

9.	a)	How can define I/O specific to a class? Explain.	7 Marks
	b)	Is hiding different from encapsulation? Explain through an example.	7 Marks

(OR)

10.		What are the steps involved in using a file in a C++ program.	14 Marks

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CODE No.:16BT21501 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Supplementary Examinations December - 2017

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. Simplify the following Boolean expressions using the Boolean theorems. 14 Marks
   i) (A+B+C) (B'+C) + (A+D) (A'+C) ii) (A+B) (A+B') (A'+B)

(OR)

2. Convert the following numbers from the given base to the other bases indicated.
   i) Decimal 225.225 to binary and hexadecimal. 8 Marks
   ii) Octal 623.77 to decimal and hexadecimal. 6 Marks

UNIT-II

3. a) Draw a logic diagram using only two-input NAND gates to implement the following expression: $F = (AB + A'B)(CD' + C'D)$ 7 Marks

   b) Implement the following Boolean function ***F*** together with the don't care conditions ***d*** using not more than two NOR gates. Assume that both the normal and complement inputs are available. 7 Marks
   ***F*(*A, B, C, D*) = Σ*m*(0,1,2,9,11)**
   ***d*(*A, B, C, D*) = Σ*d*(8,10,14,15)**

(OR)

4. a) Draw a logical circuit using basic gates to implement the following function 7 Marks
   f(A, B, C, D, E) = Σm (0,2,4,6,8,16,18,20,22,24,26,28,30) + Σd (3,7,11,15,19,23,27,31).

   b) Simplify the following using K-Map **f(A,B,C,D) = Σm (0,3,5,6,9,10,12,15)**. 7 Marks

UNIT-III

5. a) Implement the following function with 8 x 1 multiplexer 6 Marks
   ***F*(*A, B, C, D*) = Σ*m* (0, 1, 3, 4, 8, 9, 15)**

   b) Design a combinational circuit, that multiplies an input decimal digit represented in BCD by 5. The output is to be represented in BCD. Show that the outputs can be obtained from the input lines without using any logic gates. 8 Marks

(OR)

6. a) Realize and describe the operation of 4 bit magnitude comparator. 10 Marks
   b) Implement a full-adder circuit with a decoder and two OR gates. 4 Marks

UNIT-IV

7. a) Discuss the disadvantages of level triggering. Explain the effects of level triggering in a JK flip flop. 7 Marks

   b) Derive transition table and output map for an asynchronous sequential circuit has two internal states and one output if excitations and output functions are: 7 Marks

$Y_1 = x_1x_2 + x_1y_2' + x_2'y_1$; $Y_2 = x_2 + x_1y_1'y_2 + x_1'y_1$; $Z = x_2 + y_1$

(OR)

8. a) Define excitation table. Explain D-flip flop and obtain the state equation, the state diagram, state table and excitation table of the same. 7 Marks

   b) Explain the operation of a JK flip flop and give the advantages of JK flip flop. 7 Marks

UNIT-V

9. Implement the following Boolean functions using PAL: 14 Marks

   $F_1 = \Sigma m(0, 2, 5, 7, 8, 10, 12, 13)$; $F_2 = \Sigma m(0, 2, 6, 8, 9, 14, 15)$

(OR)

10. a) Explain the method of Error detection and correction. 7 Marks

    b) Explain the features of PAL. 7 Marks

CODE No.:10BT1BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations December - 2017

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) What is meant by Unit cell? Explain its significance.
b) Briefly explain Bravias Lattices.

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

3. Write a short essay on:
(i) Hall effect.
(ii) LEDs and their applications.

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. a) Who invented BCS theory, summarize this theory.
b) Write on Josephson and Meissner effects.

7. a) Explain Acceptance angle and Acceptance cone in an optical fiber.
b) What is a hologram? Mention its applications.

8. a) Explain the basic properties of nano materials.
b) Discuss in detail the sol-gel technique of synthesizing of nano materials.

CODE No.:10BT1BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations December - 2017

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) What are lubricants? Discuss briefly any four properties of lubricants.
b) Write a brief note on liquid crystals.

2. a) Narrate the vulcanization process.
b) Describe the properties and applications of PVC.

3. a) Describe the electrochemistry aspects of Ni-Cd batteries.
b) Explain the good and bad of Ni-Cd batteries.

4. a) What is corrosion? How is it classified? Mention the factors influencing the rate of corrosion of metals.
b) Describe cathodic protection of metals and alloys.

5. Explain the applications of colloids.

6. Discuss various applications of nanomaterials.

7. a) Describe a top down method for synthesis of nano materials.
b) Discuss the properties and applications of nano materials.

8. Discuss relative merits of various softening methods.

CODE No.:10BT1BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations December - 2017

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 the differential equation $\frac{dy}{dx} + x\sin 2y = x^3\cos^2 y$.

b) If the temperature of the air is 30^0C and the substance cools from 100^0C to 70^0C in 15 minutes, find when the temperature will be 40^0C.

2. a) Solve $(D^2 - 4D + 4)y = 8x^2e^{2x}\sin 2x$.

b) Solve by the method of variation of parameters $y^{11} - 2y^1 + y = e^x \log x$.

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) Show that the evolute of the cycloid x = a(θ - sin θ), y = a(1 - cos θ) is another cycloid.

b) Trace the curve $\mathbf{ay^2 = x^3}$.

5. a) Find (i) $\mathbf{L(t e^{2t} \sin 3t)}$ (ii) $\mathbf{L^{-1}\{ 1 / (s^2 + 2s + 5) \}}$.

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

6. Solve the differential equation $\mathbf{d^2x/dt^2 - 4\ dx/dt - 12\ x = e^{3t}}$ given that **x(0) = 1** and **x'(0) = - 2** using Laplace transforms.

7. a) Evaluate $\int\int \mathbf{(x^2 + y^2)\ dx\ dy}$ in the positive quadrant for which $\mathbf{x + y \leq 1}$.

b) find the surface area of the solid generated by revolving one arc of the cycloid **x = a (θ - Sin θ) , y = a (1 - Cos θ)**.

8. Find the directional derivative of $\mathbf{\varphi(x,y,z) = x^2 y z + 4 x z^2}$ at the point (1, -2 , -1) in the direction of normal to the surface $\mathbf{f(x,y,z) = x \log z - y^2}$ **at (-1 , 2 , -1)**.

CODE No.:10BT1BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations December - 2017

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]

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) Find the eigen values and the corresponding eigen vectors of the matrix $\begin{pmatrix} -2 & 5 \\ -1 & 4 \end{pmatrix}$.

b) Find the inverse of the matrix $\begin{pmatrix} 1 & 0 & 2 \\ 0 & 1 & 2 \\ 1 & 2 & 0 \end{pmatrix}$ using Cayley- Hamilton theorem.

3. a) Find the real root of the equation $\mathbf{x e^x - \cos x = 0}$, using Newton Raphson Method.
b) Fit a straight line of the form **$y = a + bx$** by the method of least squares to the data given below.

x	1	2	3	4
Y	4	11	35	100

4. a) Given that f(2) =10, f(1)= 8, f(0) = 5, f(-1) = 10 , estimate f(0.5) by using Gauss's forward formula.
b) Given that $u_0 = 580$, $u_1 = 556$, $u_2 = 520$ and $u_4 = 385$, find u_3 by Lagrange's Interpolation.

5. a) From the following table of values of x and y, find $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ for $x = 1.2$.

x	1.0	1.2	1.4	1.6	1.8	2.0	2.2
y	2.7183	3.3201	4.0552	4.9530	6.0496	7.3891	9.0250

b) Evaluate $\int_0^1 e^x \, dx$ using Simpsons 1/3rd rule.

6. Given that **$y^1 = 1 + xy^2$** , 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) Find the Fourier series to represent **$f(x) = x^2 - 2$** when **$-2 \le x \le 2$**.
b) Find the Fourier cosine transform of **$\exp(-x^2)$**.

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CODE No.:10BT1EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations December – 2017

PROBLEM SOLVING AND COMPUTER PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

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

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

3. a) Write a C program to illustrate the behaviour of **nested if** statement.
b) Distinguish between **break** and **continue** statements with behaviour flowcharts.

4. a) Design an algorithm to find the Fibonacci numbers up to **n**.
b) Write an algorithm to reverse the digits of a multi digit number.

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

6. a) List the various storage classes available in C. Explain with examples.
b) Write the differences between a Structure and Union.

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 December - 2017

ENGINEERING MECHANICS

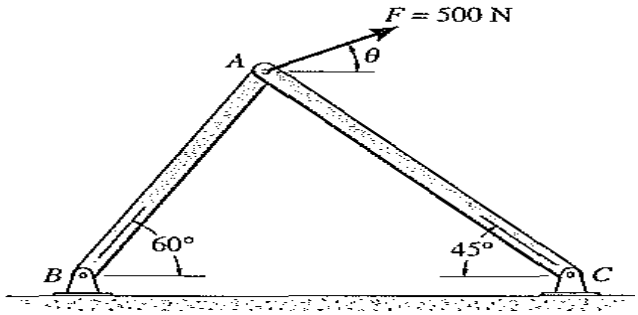
[Civil Engineering, Mechanical Engineering]

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

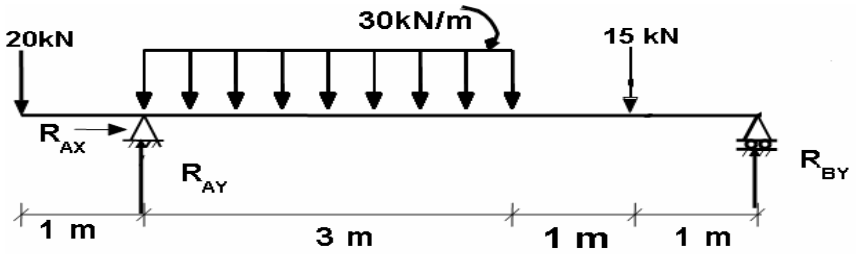
Answer any FIVE questions
All questions carry equal marks

1. a) Discuss about coplanar forces, non-coplanar forces, parallel and non parallel forces with suitable examples.

b) The 500N force acting on the frame is to be resolved into two components acting along the axis of the struts AB and AC as shown in figure. If the component of force along AC is required to be 300 N, directed from A to C, determine the magnitude of force acting along AB and the angle θ of the 500 N force.

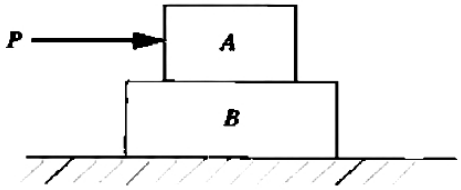


2. Calculate support reactions at A and B.



3. a) Define cone of friction and wedge friction. Write the laws of friction.

b) The coefficient of friction between a copper block A and an aluminum block B is 0.3, and between the block B and the floor is 0.2. The weight of block A is 30 N and of block B is 20 N as shown in figure. What force P will cause the motion of block A to impend?



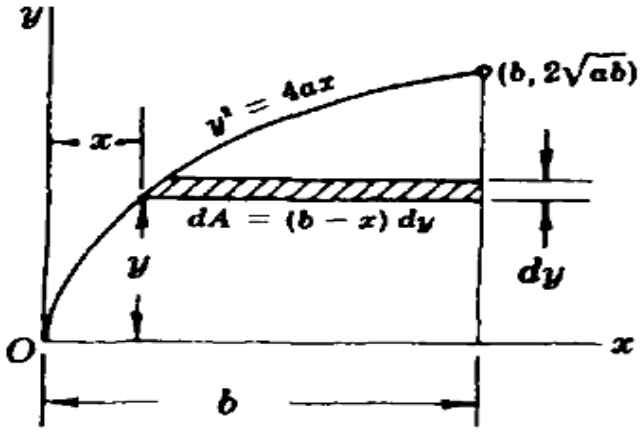
4. a) Explain the principles of operation of a screw-jack with a neat sketch.

b) Outside diameter of a square threaded spindle of a screw jack is 40mm. The screw pitch is 10mm. If the coefficient of friction between the screw and the nut is 0.15, neglecting friction between the nut and collar, determine

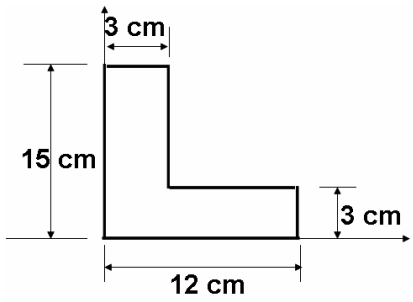
i) Force required to be applied at the screw to raise a load of 2000N.
ii) The efficiency of screw jack.
iii) Force required to be applied at pitch radius to lower the same load of 2000N.
iv) Efficiency while lowering the load.

5. a) Discuss the theorems of Pappus and write their engineering applications.

b) Determine centriod of the for the area bounded by the parabola $\mathbf{y^2 = 4ax}$ and the lines y = 0, x = b shown in figure.



6. Calculate the moment of inertia of the L section shown in figure with respect the controidal x-axis and y axis.



7. a) Distinguish between

i) Speed and Velocity

ii) Acceleration and deceleration

b) A body is projected at such an angle that the horizontal range is $4\sqrt{3}$ times the maximum height. Find the angle of projection.

8. a) Explain D'Alembert's principle.

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

i) lift is moving upward.

ii) lift is moving downward.

CODE No.:10BT1BS01 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations June - 2018

ENGINEERING PHYSICS

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, 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) What is space lattice? Explain with an example.
b) What are Miller Indices? Explain its significance.
c) State and explain Bragg's law.

2. a) State and explain the De Broglie's hypothesis.
b) Discuss in detail, the Fermi-Dirac distribution. What is the effect of temperature on this distribution ?

3. a) Explain the concepts of Drift and Diffusion in semiconductors.
b) State and explain the Hall effect in semiconductors.
c) Explain the principle involved in the working of an LED.

4. a) Write on the polarization in dielectrics.
b) What is Clausius-Mossotti equation and its significance?
c) Write on local fields in solid dielectrics.

5. a) Explain the significance of Sabine's formula for reverberation time.
b) Describe the method of measuring the absorption coefficient of a material.
c) What are mufflers? Explain.

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

7. a) Describe briefly the different types of optical fibers with neat diagrams.
b) Calculate the refractive indices of core and cladding of an optical fiber with a numerical aperture of 0.33 and their fractional change of refractive indices being 0.02.

8. a) What are methods of preparation of nano materials? Explain.
b) What are the properties and applications of nano materials?

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

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations June - 2018

ENGINEERING CHEMISTRY

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, 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. Give an account on preparation and engineering applications of PVC.

3. a) What are reference electrodes? Explain the working of calomel electrodes.
b) What are secondary cells? Describe the working of solid state lithium ion battery.

4. Explain factors influencing the corrosion and explain different methods for the prevention of corrosion.

5. Explain the applications of colloids.

6. a) Explain the principle of NMR spectroscopy.
b) Explain the applications of Atomic Absorption Spectroscopy.

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

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

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations June - 2018

ENGINEERING MATHEMATICS

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, 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 $y\log y\,dx + (x - \log y)\,dy = 0$.

b) A body is heated to 110^0C and placed in air at 10^0C. After one hour its temperature is 60^0C. How much additional time is required for it to cool to 30^0C?

2. a) Solve the differential equation **$(D^3 + 1)\,y = \cos(2x - 1)$.**

b) Solve the differential equation **$(D^2+4)\,y = \sec 2x$** by the method of variation of parameters.

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

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

4. a) Trace the curve $x = a(t - \sin t), y = a(1 + \cos t)$.

b) Show that the parabolas $y = -x^2 + x + 1, x = -y^2 + y + 1$ have the same circle of curvature at the point (1, 1).

5. a) Find the Laplace transform of **$(1-\cos at)/t$**.

b) Apply convolution theorem to evaluate $L^{-1}\left[\frac{s}{(s^2+1)^2}\right]$.

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

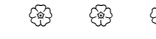
b) Find the inverse Laplace transform of $\frac{2s^2 - 6s + 5}{s^3 - 6s^2 + 11s - 6}$ by using Heaviside's expansion formula.

7. a) Find the volume of a spherical segment of height 'h' cut off from a sphere of radius 'a'.

b) Evaluate $\int_0^{\infty}\int_x^{\infty} \frac{e^{-y}}{y}\,dy\,dx$ by changing the order of integration.

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 **$y = 0$**, **$x = \pi/2$** and **$\pi y = 2x$**.



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations June - 2018

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) 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) Find a real root of **$x + \log_{10} x - 2 = 0$** using Newton Raphson method.

b) Determine the constants **a** and **b** by the method of least squares such that the curve **$y = a e^{bx}$** fits the following data:

x	2	4	6	8	10
y	4.077	11.084	30.128	81.897	222.62

4. a) Find y(25), given that $y_{20} = 24$, $y_{24} = 32$, $y_{28} = 35$, $y_{32} = 40$, using Gauss forward difference formula.

b) Using Lagrange's interpolation formula, find the value of y(10) from the following table.

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

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

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

8. Find the Fourier transform of $f(x)$ defined by $f(x) = \begin{cases} 1 - x^2, if\ |x| \le 1 \\ 0 \quad , if\ |x| > 1 \end{cases}$.

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

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations June - 2018

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) Preprocessor iv) Macro-processor
v) Hardware
b) Explain the significance of Top down design concept.

2. a) Write and explain the structure of a typical 'C' program.
b) What are preprocessor commands? Explain with an example.

3. a) Write a 'C' program to depict the behaviour of switch statement.
b) Explain conditional and unconditional branch statements with examples.

4. a) Write a 'C' program to convert a given octal number into its binary form.
b) Write a 'C' program to find Greatest Common Divisor.

5. a) Write an algorithm to sort an array of **n** integers using selection sort technique.
b) Write a 'C' program to delete leading white spaces in an input string of characters.

6. a) Distinguish between call by value and call by reference with example routines.
b) Define union. Write a 'C' program to illustrate the usage of union.

7. a) Write a function that reverses the elements of an array.
b) Explain malloc, realloc and calloc memory allocation functions.

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

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations December - 2017

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)	Explain the working principle of He-Ne Laser with diagram.	8 Marks
	b)	What are the applications of Lasers?	6 Marks
		(OR)	
2	a)	State and explain the hologram.	6 Marks
	b)	Describe the reconstruction of image from hologram.	8 Marks

UNIT-II

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

UNIT-III

5	a)	Why is the wave nature of matter not apparent in our daily observations? Explain it with suitable example.	4 Marks
	b)	What is the importance of Schrodinger's wave equation? Derive an expression for the wave function and energy of a particle confined in a one dimensional potential box.	10 Marks
		(OR)	
6	a)	What is effective mass? Derive an expression for effective mass of an electron.	9 Marks
	b)	Explain origin of energy band formation in solids.	5 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.	6 Marks
	b)	Describe the principle with diagram of LED devices.	8 Marks

UNIT-V

9	a)	Distinguish between soft and hard magnetic materials.	6 Marks
	b)	Explain the origin of magnetic moment.	8 Marks
		(OR)	
10	a)	Write the carbon nano tube properties and applications.	8 Marks
	b)	What is the quantum confinement?	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations December - 2017

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)	Discuss the structural forms of liquid crystals and give its properties.	7 Marks
	b)	Explain important applications of conducting polymers.	7 Marks
		(OR)	
2	a)	Give the classification of composites.	7 Marks
	b)	Explain characteristic properties of insulators.	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 the working principle of solid oxide fuel cells with reactions.	7 Marks
	b)	Give the significance of hydrogen electrode in electrochemical cells.	7 Marks
		(OR)	
6	a)	Define corrosion. Discuss concentration cell corrosion.	7 Marks
	b)	Compare H_2-O_2 fuel cell with traditional cells.	7 Marks

UNIT-IV

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

UNIT-V

9 a) Write a note on: 7 Marks

i) Green computing.

ii) Green construction.

b) Explain how chemical vapour deposition method is useful to prepare carbon nanotubes. 7 Marks

(OR)

10 a) What are the factors affecting the properties of Nanomaterials? 7 Marks

b) How nanomaterials are classified? 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations December – 2017

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: $\frac{dy}{dx} + x\sin 2y = x^3\cos^2 y.$ 7 Marks

b) Solve: $y'' - 2y' + y = e^x \log x$ by the method of variation of parameters. 7 Marks

(OR)

2 a) Solve: $(D^2 - 2D + 1)y = xe^x \sin x.$ 7 Marks

b) The temperature of the body drops from 100^0C to 75^0C in ten minutes when the surrounding air is at 20^0C temperature. What will be its temperature after half an hour. When will the temperature be 25^0C. 7 Marks

UNIT-II

3 a) Express equation $\frac{\partial^2 y}{\partial x^2} + \frac{\partial^2 y}{\partial y^2} = 0$ in polar form (r, θ). 7 Marks

b) Show that the rectangular solid of maximum volume that can be inscribed in a sphere is cube. 7 Marks

(OR)

4 a) Trace the curve $a^2y^2 = x^2(a^2 - x^2)$. 7 Marks

b) Find the radius of curvature at any point of the cardioid $\boldsymbol{r = a(1 - \cos\theta).}$ 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 $\iint_R ydxdy$ where R is the region bounded by the parabolas $\boldsymbol{y^2=4ax}$ and $\boldsymbol{x^2=4ay}$. 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 $\boldsymbol{x + y + z = 1}$. 7 Marks

UNIT-IV

7 a) Find the Laplace transform of $f(t) = \begin{cases} \sin(wt) & when \quad 0 < t < \pi / w \\ 0 & when \quad \pi / w < t < 2\pi / w \end{cases}$. 7 Marks

b) Find the inverse Laplace transform of $(i)\log\left(\frac{s^2+1}{(s-1)^2}\right)$ $(ii)\frac{s+2}{(s^2+4s+5)^2}$. 7 Marks

(OR)

8 a) Solve $y'' + 2y' - 3y = \sin t$ such that $y'(0) = 0$ *and* $y(0) = 0$. 7 Marks

b) Find the Laplace transform of *(i)* $\cos^3 2t$ *(ii)* $e^{-2t}\cosh 3t$ 7 Marks

UNIT-V

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

b) Find the directional derivative of the function $f(x, y, z) = x^2 - y^2 + 2z^2$ at the point $P(1, 2, 3)$ in the direction of the line PQ where $Q(5, 0, 4)$. 7 Marks

(OR)

10 a) Verify divergence theorem for $\boldsymbol{F = x^2 i + y^2 j + z^2 k}$ taken over the rectangular parallelepiped $\boldsymbol{0 \le x \le a, 0 \le y \le b, 0 \le z \le c}$. 7 Marks

b) Evaluate $\iiint_V xyz\, dx\, dy\, dz$ take over the volume V of the tetrahedron given by 7 Marks
$\boldsymbol{x \ge 0,\ y \ge 0,\ z \ge 0}$ and $\boldsymbol{x + y + z \le 1}$.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech (SVEC14) Supplementary Examinations December - 2017

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; 3x + 2y – 2z = –2; 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 $\mathbf{A^{-1}}$. 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) The population of certain town (as obtained from census data) is shown in the table. Find the rate of the growth of the population in 1971 and 2011. 7 Marks

year:	1971	1981	1991	2001	2011
Population in thousands:	19.96	39.65	58.81	77.21	94.61

b) Compute y (0.1) from first approximation of Picard's method for the initial value 7 Marks

problem $\frac{dy}{dx} = \frac{y - x}{y + x}$.

(OR)

6 a) Using Euler's modified method, obtain a solution of the equation $\frac{dy}{dx} = x + |\sqrt{y}|$ with initial condition $y = 1$ at $x = 0$, for the range $0 \le x \le 0.4$ in steps of 0.2 . 7 Marks

b) A river is 80 feet wide. The depth **d** in feet at a distance **x** feet from one bank is given by the following table: 7 Marks

x	0	10	20	30	40	50	60	70	80
d	0	4	7	9	12	15	14	8	3

Find approximately the area of the cross-section of the river.

UNIT-IV

7 a) Express the following function as a Fourier series: 7 Marks

$$f(x) = \begin{cases} 1 + 2x/\pi ; & -\pi \le x \le 0 \\ 1 - 2x/\pi ; & 0 \le x \le \pi \end{cases}$$

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 $z = y^2 + 2f\left(\frac{1}{x} + \log y\right)$ 7 Marks

b) Solve by the method of separation of variables $3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0$ with $u(x,0) = 4e^{-x}$ 7 Marks

(OR)

10 An insulated rod of length has its ends A and B maintained at 0^0 C and 100^0 C respectively until steady state condition prevails . If B is suddenly reduced to 0^0 C and maintained at 0^0 C. Find the temperature at a distance x from A at time t. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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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)	Differentiate compiler and interpreter.	7 Marks
	b)	Draw the flow chart for finding the maximum of three numbers.	7 Marks
		(OR)	
2	a)	What is an identifier? Write the algorithm for checking whether the given number is prime or not.	8 Marks
	b)	Explain in detail about any three input and output statements used in C language.	6 Marks

UNIT-II

3	a)	Explain the format string in **printf** function with examples.	7 Marks
	b)	Write a simple program to find GCD of two numbers n_1, n_2 using conditional operator and if statements.	7 Marks
		(OR)	
4	a)	How to specify test condition for selection and iteration? Discuss	7 Marks
	b)	Write a program to display the sum of the digits of a 5-digit number.	7 Marks

UNIT-III

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

UNIT-IV

7	a)	What operators are applicable to pointers? Give examples.	7 Marks
	b)	Is structure a user-defined data type? Justify your answer.	7 Marks
		(OR)	
8	a)	How pointers can be passed to functions as parameters? Explain with a program.	7 Marks
	b)	What is a file? Explain file operations and C library functions for them.	7 Marks

UNIT-V

9	a)	What is circular linked list? What are its merits and demerits over single linked list?	7 Marks
	b)	Explain the applications of stacks in detail.	7 Marks
		(OR)	
10	a)	Give an example for binary tree. Explain various kinds of binary tress.	7 Marks
	b)	Write a program to implement a queue using arrays.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech (SVEC14) Supplementary Examinations December - 2017

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)	Write an algorithm for Tower of Honai problem.	7 Marks
	b)	Explain about type casting. How can we convert **char** to **int**?	7 Marks
		(OR)	
2	a)	Write a C program for evaluating postfix expression.	7 Marks
	b)	Write a C program to exchanging the values between two variables and draw flowchart along with algorithm.	7 Marks

UNIT-II

3	a)	Give different loops used in C.	7 Marks
	b)	Write a program to check given number is perfect number or not.	7 Marks
		(OR)	
4	a)	Write note on nested loop statements.	7 Marks
	b)	Write a C program to print the given number in prime or not.	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)	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 the working of pointers with an example.	7 Marks
	b)	Write a C program for **malloc** and **calloc**.	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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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech (SVEC14) Supplementary Examinations December - 2017

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 A heavy uniform rod of length **2a** rests in equilibrium, having one end against a smooth vertical wall and being placed upon a peg at a distance **b** from the wall. Show that the inclination of the rod to the horizon is $\cos^{-1}(b/a)^{1/3}$. 14 Marks

(OR)

2 A 10^0 wedge is used to raise a body weighing 1200N. Determine the minimum force **P** required to raise the body if the coefficient of friction $\mu = 0.35$ between all the surfaces. 14 Marks

UNIT-II

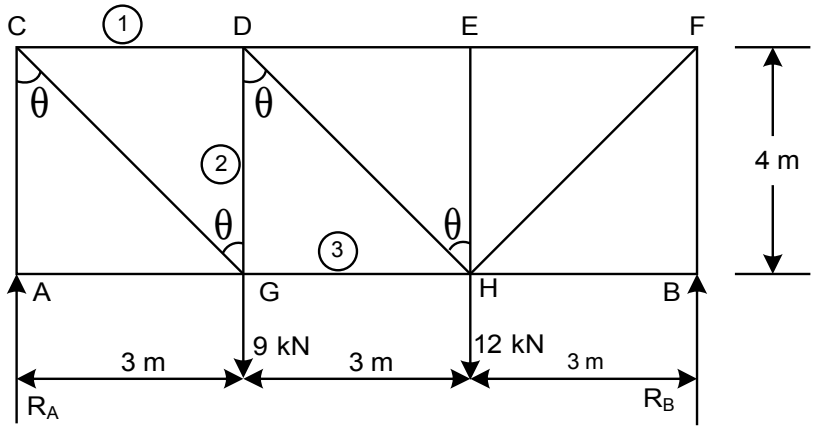
3 a) Differentiate between a roller support and a hinged support. 4 Marks

b) A simply supported beam AB is subjected to a distributed load increasing from 1600N/m to 4600N/m from end A to end B respectively. The span AB = 6.5m. Determine the reactions at the supports. 10 Marks

(OR)

4 a) State the difference between a perfect frame and an imperfect frame. 4 Marks

b) A truss of span 9m is loaded as shown in figure. Find the forces in the members marked as 1, 2, and 3, by method of sections. 10 Marks



UNIT-III

5 Determine the Second moment area of an unsymmetrical I-section about two orthogonal axes passing through the centroid. Overall height of the section is 400mm, top flange is 150mm wide and 10mm thick and the bottom flange is 200mm wide and 10mm thick. Web thickness is 12mm. 14 Marks

(OR)

6 State theorems of Pappus and hence find the total surface area of a frustum of a hollow cone of height 40mm, base outer radius and inner radius 100mm and 40mm respectively and top outer radius and inner radius 60mm and 40mm 14 Marks

respectively. (inner face of the cone is vertical)

UNIT-IV

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

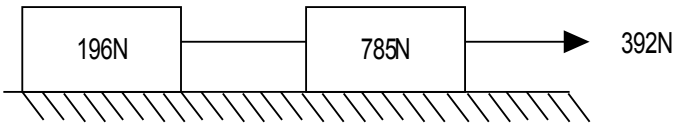
(OR)

8 A wheel, rotating about a fixed axis at 20 r.p.m., is uniformly accelerated for 70 seconds, during which time it makes 50 revolutions. Find 14 Marks
i) Angular velocity at the end of this interval.
ii) Time required for the speed to reach 100 revolutions per minute.

UNIT-V

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

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



(OR)

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

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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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 characteristics of Lasers?	6 Marks
	b)	Explain the Semiconductor Laser construction with neat diagram.	8 Marks
		(OR)	
2	a)	Write the Sabine's formula for reverberation time.	6 Marks
	b)	Explain the basic requirements of acoustically good hall.	8 Marks

UNIT-II

3	a)	What is Time Dilation? Obtain relativistic formula for the addition of velocities.	8 Marks
	b)	Define the reverberation time. Discuss the importance of reverberation time for design of an acoustically good hall.	6 Marks
		(OR)	
4	a)	What are Miller Indices of a crystal plane? Obtain an expression for inter planar spacing in cubic crystal.	10 Marks
	b)	Calculate the longest wavelength that can be analyzed by rock - salt of spacing 2.5 **Å** in the first order.	4 Marks

UNIT-III

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

UNIT-IV

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

UNIT-V

9	a)	Distinguish between soft and hard magnetic materials.	6 Marks
	b)	Explain the origin of magnetic moment.	8 Marks
		(OR)	
10	a)	Write the carbon nano tube properties and applications.	8 Marks
	b)	What is the quantum confinement?	6 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)	Discuss the structural forms of liquid crystals and give its properties.	7 Marks
	b)	Explain important applications of conducting polymers.	7 Marks
		(OR)	
2	a)	Give the classification of composites.	7 Marks
	b)	Explain characteristic properties of insulators.	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)	Discuss permutit process and explain its advantages.	7 Marks
	b)	Define the term reverse osmosis. Explain the process of purification of sea water using this method.	7 Marks

UNIT-III

5	a)	Explain the working principle of solid oxide fuel cells with reactions.	7 Marks
	b)	Give the significance of hydrogen electrode in electrochemical cells.	7 Marks
		(OR)	
6	a)	Define corrosion. Discuss concentration cell corrosion.	7 Marks
	b)	Compare H_2-O_2 fuel cell with traditional cells.	7 Marks

UNIT-IV

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

UNIT-V

9	a)	What is effect of nanotechnology on food science?	7 Marks
	b)	How Plasma Enhanced Chemical Vapour Deposition is useful for synthesis of nanomaterials. How it is advantage over sol-gel process?	7 Marks
		(OR)	
10	a)	Explain about green manufacturing systems by taking suitable example.	7 Marks
	b)	Write short notes on: i) Green solvents. ii) Biocatalysis.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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

ENGINEERING MATHEMATICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Solve $(3y + 2x + 4)dx - (4x + 6y + 5)dy = 0$. 7 Marks

b) Find the orthogonal trajectories of the family circles $x^2 + y^2 = ax$. 7 Marks

(OR)

2 a) Solve $y'' + 4y' + 3y = e^{-x}.\sin(x) + x.e^{3x}$. 7 Marks

b) Solve $y'' + 3y' + 2y = (1+e^{-x})^{-1}$, using the method of variation of parameters. 7 Marks

UNIT-II

3 a) Express equation $\frac{\partial^2 y}{\partial x^2} + \frac{\partial^2 y}{\partial y^2} = 0$ in polar form (r, θ). 7 Marks

b) Show that the rectangular solid of maximum volume that can be inscribed in a sphere is cube. 7 Marks

(OR)

4 a) Sketch the curve for the equation $r = a\sin 3\theta$. 7 Marks

b) Find the radius of curvature at the point (r, θ) of the cardioids $r = a(1 - \cos\theta)$. 7 Marks

UNIT-III

5 a) Find the entire length of the cardioid $r = a(1 + \cos\theta)$. Also show that the upper half is bisected by $\theta = \frac{\pi}{3}$. 7 Marks

b) Find the volume of the solid generated by cycloid $x = a(\theta + \sin\theta)$, $y = a(1 + \cos\theta)$ about its base. 7 Marks

(OR)

6 a) Evaluate $\int_0^{\infty}\int_x^{\infty} \frac{e^{-y}}{y}\,dydx$ by changing the order of integration. 7 Marks

b) Find the volume bounded by the paraboloid $x^2 + y^2 = az$, the cylinder $x^2 + y^2 = 2ay$ and the plane $z=0$. 7 Marks

UNIT-IV

7 a) Find the Laplace transform of: i) $\cos^3 4t$. ii) $e^{-3t}.t^2.\sin(t)$. 7 Marks

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

(OR)

8 a) Find $L^{-1}\left\{\log\left[\frac{s^2+1}{s(s+1)}\right]\right\}$. 7 Marks

b) Solve by the Laplace transform method $y'' - 3y' + 2y = e^{3t}$, $y(0) = 1$ and 7 Marks

$y'(0) = 0$.

UNIT-V

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

b) Find the directional derivative of the function $f(x, y, z) = x^2 - y^2 + 2z^2$ at the point $P(1, 2, 3)$ in the direction of the line PQ where $Q(5, 0, 4)$. 7 Marks

(OR)

10 a) Verify divergence theorem for $\boldsymbol{F = x^2 i + y^2 j + z^2 k}$ taken over the rectangular parallelepiped $\boldsymbol{0 \le x \le a, 0 \le y \le b, 0 \le z \le c}$. 7 Marks

b) Evaluate $\iiint_V xyz\, dx\, dy\, dz$ take over the volume $\boldsymbol{V}$ of the tetrahedron given by $\boldsymbol{x \ge 0, y \ge 0, z \ge 0}$ and $\boldsymbol{x + y + z \le 1}$. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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

MATHEMATICAL METHODS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define the rank and determine the rank of the matrix $\begin{bmatrix} 1 & 2 & 3 & 0 \\ 2 & 4 & 3 & 2 \\ 3 & 2 & 1 & 3 \\ 6 & 8 & 7 & 5 \end{bmatrix}$. 7 Marks

b) For what values of *k,* the following system of equations $x + y + z = 1;\ 2x + y + 4z = k;\ 4x + y + 10z = k^2$ are consistent. When will these equations have a unique solution? 7 Marks

(OR)

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

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

UNIT-II

3 a) Find an approximate root of the equation $x\log_{10}(x) = 1.2$, using False position method and correct to four decimal places. 7 Marks

b) Fit a second degree polynomial to the following data by the method of least squares. 7 Marks

x :	10	15	20	25	30	35
y :	35.3	32.4	29.2	26.1	23.2	20.5

(OR)

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

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

UNIT-III

5 Find $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ at x = 15 and x = 23 from the following table. 14 Marks

x :	15	17	19	21	23	25
Y :	3.873	4.123	4.359	4.583	4.796	5.0

(OR)

6 a) Evaluate $\int_4^{5.2} \log x dx$ by Simpson's **3/8th** rule for the following data. 7 Marks

x:	4.0	4.2	4.4	4.6	4.8	5.0	5.2
log x:	1.3863	1.4351	1.4861	1.5261	1.5686	1.6094	1.6487

b) Find the first and second derivatives of the function y = f(x), tabulated below at 2.03. 7 Marks

x :	1.96	1.98	2.00	2.02	2.04
y = f(x):	0.7825	0.7739	0.7651	0.7563	0.7473

UNIT-IV

7 a) Expand **f(x)= x** as a cosine series in the interval **0 < x < π** and hence deduce **$1/1^2+1/3^2+1/5^2+$--------- = $\pi^2/8$**. 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) Obtain the Fourier series for the function $f(x) = \begin{cases} \pi x, when\ 0 \le x \le 1 \\ \pi(2-x), when\ 1 \le x \le 2. \end{cases}$ 7 Marks

b) Solve the difference equation : $y_{n+2} - 6y_{n+1} + 8y_n = 2^2 + 6n$. 7 Marks

UNIT-V

9 a) Find the differential equation of all spheres whose centers lie on the Z-axis. 7 Marks

b) A rod of length *l* with insulated sides is initially at a uniform temperature $\boldsymbol{u_0}$. Its ends are suddenly cooled to 0ºC and are kept at that temperature. Find the temperature function **u(x,t).** 7 Marks

(OR)

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

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

CODE No.:14BT1ES01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

PROGRAMMING IN C AND DATA STRUCTURES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw a flow chart to find the reverse of a given number.	7 Marks
	b)	What is a Compiler? Write the differences between Compiler and an Interpreter.	7 Marks
		(OR)	
2	a)	What is an algorithm and also explain the components of algorithm?	6 Marks
	b)	Explain the structure of a 'C' program using an example.	8 Marks

UNIT-II

3	a)	Describe formatted input in **scanf** function.	7 Marks
	b)	Write a program to convert a decimal number into any base.	7 Marks
		(OR)	
4	a)	Explain the **switch** statement with an example.	7 Marks
	b)	Write a 'C' program to find the factorial of a number.	7 Marks

UNIT-III

5	a)	What is multidimensional array? How is it declared and initialized? Give example.	7 Marks
	b)	Write 'C' program to perform binary search on an array.	7 Marks
		(OR)	
6	a)	How functions help in handling complexity of problem solving? Explain.	7 Marks
	b)	Write a 'C' program to reverse a string with out using library function.	7 Marks

UNIT-IV

7	a)	Explain array of structures and structure within a structure with examples.	7 Marks
	b)	Write a 'C' program to read and display a text from the file.	7 Marks
		(OR)	
8	a)	With a program, explain the usage of command line arguments.	7 Marks
	b)	Explain working with text files.	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)	What is queue? Discuss all its variants.	7 Marks
	b)	Discuss tree as a data structure. Explain its applications in detail.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

PROBLEM SOLVING AND COMPUTER PROGRAMMING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the characteristics of an algorithm?	7 Marks
	b)	Define different symbols used in flow chart.	7 Marks
		(OR)	
2	a)	Define constant. Give constant representation for character and string.	7 Marks
	b)	What is the difference between Identifier and Variable? Explain with a 'C' program.	7 Marks

UNIT-II

3	a)	Give different conditional statements in 'C'.	7 Marks
	b)	Write a 'C' program to check given number is prime number or not.	7 Marks
		(OR)	
4	a)	Explain the different control loops in 'C'.	7 Marks
	b)	Write a 'C' program to generate the Fibonacci series.	7 Marks

UNIT-III

5	a)	Define string. List out string functions in 'C'.	7 Marks
	b)	Write a 'C' program to sort given strings.	7 Marks
		(OR)	
6	a)	Explain recursion with suitable example.	7 Marks
	b)	Write a 'C' program to find the factorial of a number using recursion.	7 Marks

UNIT-IV

7	a)	Explain about *call by value* and *call by reference* with an example.	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? With an example, explain the working of pointers.	7 Marks
	b)	Write a 'C' program for *malloc* and *calloc*.	7 Marks

UNIT-V

9	a)	What are characteristics of a data structure? Why data structures are used?	7 Marks
	b)	Write a 'C' program for stack implementation using pointers.	7 Marks
		(OR)	
10	a)	Define stack. Illustrate stack with the help of example.	7 Marks
	b)	Write a 'C' program to perform push and pop operation in stack.	7 Marks

CODE No.:14BT10301 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ENGINEERING MECHANICS

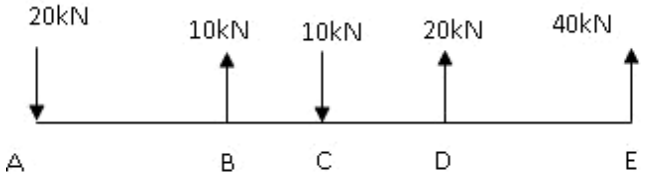
[Civil Engineering, Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

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



(OR)

2 A 10^0 wedge is used to raise a body weighing 1200N. Determine the minimum force P required to raise the body if the coefficient of friction $\mu = 0.35$ between all the surfaces. 14 Marks

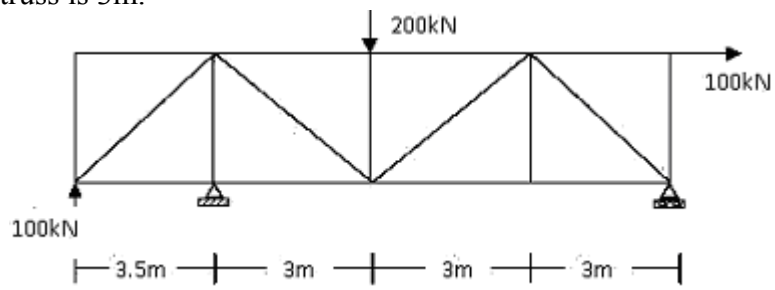
UNIT-II

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

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

(OR)

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



UNIT-III

5 a) Distinguish between centre of gravity and centroid. 4 Marks

b) A square hole is punched out of circular lamina, the diagonal of the square being a radius of the circle. Find the CG of the remainder and also show that this new CG is at a distance of **$2r/(8\pi-4)$**from the centre of the circle. 10 Marks

(OR)

6 a) State and prove the theorem of perpendicular axis. 4 Marks

b) The base of a triangular section is 14cm. If its perpendicular distance of the base from the vertex is 12cm, find its moment of inertia about the CG. 10 Marks

UNIT-IV

7 The motion of a particle is given by $\mathbf{x=2(t+1)^2}$ and $\mathbf{y=2(t+1)^{-2}}$ determine the velocity and acceleration of the particle at **t=0** and at **t=1**sec. 14 Marks

(OR)

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

UNIT-V

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

(OR)

10 a) Differentiate between kinematics and kinetics. 4 Marks

b) A cricket ball of mass 10gm moving with a velocity of 20m/s is brought to rest by a player in 0.05sec. Find the impulse of the ball and average force applied by the player. 10 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

PROBABILITY DISTRIBUTIONS AND STATISTICAL METHODS

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

Max. Marks: 70

Time: 3 hours

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define discrete random variable, variance of discrete distribution, the relation between probability density function and cumulative density function of random variable. CO1 7 Marks

b) For continuous random variable whose p.d.f. is given by $f(x) = 3x^2$ when $0 \le x \le 1$. Determine a and b such that CO4 7 Marks

i) $P(X \le a) = P(X>a)$; ii) $P(X> b) = 0.05$.

(OR)

2 a) A box contains 8 items of which 2 are defective. A man draws 3 items from the box. Find the expected number of defective items he has drawn. CO5 7 Marks

b) A continuous random variable X has the distribution function CO4 7 Marks

$$F(x) = \begin{cases} 0 & for\ x \le 1 \\ k(x-1)^4 & for\ 1 \le x \le 3 \\ 1 & for\ x > 3 \end{cases}.$$

Determine (*i*) k (*ii*) probability density function of X.

UNIT-II

3 a) 20% of items produced from a factory are defective. Find the probability in a sample of 5 chosen at random CO4, CO5 7 Marks

i) None is defective.
ii) One is defective.
iii) P (1 < X < 4).

b) In a test of 800 students was normally distributed with average weight 140 pounds and standard deviation 10 pounds. Find the number of students whose weights are CO4 7 Marks

i) Between 125 pounds and 150 pounds.
ii) More than 155 pounds.

(OR)

4 a) If the variance of a passion variate is 3, then find the probability that CO4 7 Marks

i) X = 0 (ii) 0 < X < 3 (iii) 1 ≤ X < 4.

b) Calculate the probability that among 36 engineering students, assume that 50% of all engineering students are good in mathematics find the probability that CO4 7 Marks

i) Exactly 10 (ii) At least 10 iii) At most 8
iv) At least 2 and at most 9 are good in mathematics.

UNIT-III

5 Construct the mean and range charts from the following data and draw the conclusions from results obtained. CO3 14 Marks

Sample No.	1	2	3	4	5	6	7	8	9	10
Mean	12.8	13.3	14.5	13.9	13.2	15.1	12.4	12.5	14.2	13.5
Range	2	3	3.5	2.5	1.5	2.4	2.8	3.4	1.7	2.2

(OR)

6 Price indices of cotton and wool are given below for the 12 months of a year. Obtain the equations of lines of regression between the indices. CO2, CO5 14 Marks

Price index of cotton	78	77	85	88	87	82	81	77	76	83	97	93
Price index of wool	84	82	82	85	89	90	88	92	83	89	98	99

UNIT-IV

7 a) A sample of 64 students have a mean weight 70kgs. Can this be regarded as a sample from a population with mean weight 56kgs and standard deviation 25kgs? CO2 7 Marks

b) A sample of 900 members has a mean 3.5cms and standard deviation 2.61cms. Examine whether the sample drawn from a population with a mean 3.25cms and standard deviation 2.61cms or not. Justify your answer. CO2, CO4 7 Marks

(OR)

8 a) In a random sample of 1000 persons from town A, 400 are found to be consumers of wheat. In a sample of 800 from town B, 400 are found to be consumers of wheat. Do these data reveal a significant difference between town A and town B so far as the proportion of wheat consumers is concerned? CO2, CO5 7 Marks

b) Explain briefly about (*i*) Test of hypothesis (*ii*) Type I and Type II errors. CO1 7 Marks

UNIT-V

9 a) A random sample of 10 boys had the following IQ's 70, 120, 110, 101, 88, 86, 95, 98, 107, 100 CO4 7 Marks

i) Check whether these data support the assumption of a population mean IQ of 100

ii) Find 95% confidence limits of the mean IQ values of samples of 10 boys.

b) Two independent samples of 7 items respectively had the following values. CO4 7 Marks

Sample I	11	11	13	11	12	15	12	14
Sample II	9	11	10	12	10	9	0	---

Test 0.05 level of significance whether the difference between the means of samples significant.

(OR)

10 Two researchers adopted different samples techniques while investigating same group of standards to find the number of students falling into different intelligence level. CO4 14 Marks

Researchers	Below avg;	Avg	Above avg	Genius
X	86	60	44	10
Y	40	33	25	2

Test 0.05 level of significance; whether there is significant difference between the techniques adopted by two researchers.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

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 $\beta(m,n) = \frac{\Gamma(m)\Gamma(n)}{\Gamma(m+n)}$.	CO1	7 Marks
	b)	Compute the values of (*i*) β(m, ½) (*ii*) Γ(m) Γ(m + ½).	CO4	7 Marks
		(OR)		
2	a)	Show that $J_n^{11}(x) = \frac{1}{4}(J_{n-2}(x) - 2J_n(x) + J_{n+2)}(x))$.	CO4	7 Marks
	b)	Express $J_3(x)$ in terms of $J_0(x)$ and $J_1(x)$.	CO4	7 Marks

UNIT-II

3	a)	Define analytic function. Show that the function $f(z) = \sqrt{xy}$ is not analytic at the origin, even though C-R equations are satisfied thereof.	CO4	7 Marks
	b)	Determine the analytic function whose real part is Cos(*x*). Cos*h*(*y*).	CO4	7 Marks
		(OR)		
4	a)	If $f(z)$ is an analytic function, then prove that $\left(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2}\right)\|\text{Rel.} f(z)\|^2 = 2\|f'(z)\|^2$.	CO4	7 Marks
	b)	Show that the polar form of C-R equations are $\frac{\partial u}{\partial r} = \frac{1}{r}\frac{\partial v}{\partial \theta}$ and $\frac{\partial u}{\partial \theta} = r\frac{\partial v}{\partial r}$ and deduce that $\frac{\partial^2 u}{\partial r^2} = \frac{1}{r}\frac{\partial u}{\partial r} + \frac{1}{r^2}\frac{\partial^2 u}{\partial \theta^2} = 0$.	CO1	7 Marks

UNIT-III

5	a)	Evaluate $\int_0^{1+i} (x - 6 + ix^2)\, dz$ along the straight line from $z = 0$ to $1 + i$.	CO4	7 Marks
	b)	Construct the series for $f(z) = \frac{1}{(z-1)(z-2)}$ in the region $\|z\| < 1$.	CO3	7 Marks
		(OR)		
6	a)	Evaluate $\int_c \frac{Cos\pi z}{z^2 - 1} dz$ by Cauchy's integral formula, where C is the rectangle with vertices $2 \pm I$ and $-2 \pm i$.	CO4	7 Marks
	b)	Construct Laurent's series expansion $\frac{z^2 - 1}{z^2 + 5z + 6}$ in the region $2 < \|z\| < 3$.	CO3	7 Marks

UNIT-IV

7		Define simple pole. Find the residues $f(z) = \frac{z^3}{(z-1)^4(z-2)(z-3)}$ at its poles and hence evaluate $\int_c f(z)dz$, where C is the circle $\|z\| = 2.5$.	CO3	14 Marks
		(OR)		
8		Prove that $\int_0^{2\pi} \frac{d\theta}{(5 - 3Cos\theta)^2} = \frac{5\pi}{32}$ by complex variable technique.	CO5	14 Marks

UNIT-V

9	a)	Show that the image of the hyperbola $x^2 - y^2 = 1$ is the Lemniscate $\rho^2 = \cos 2\varphi$ under the transformation $w = \frac{1}{z}$.	CO3	7 Marks
	b)	Determine the linear fractional transformation which maps the points $z = 1, i, -1$ in to the points $w = 0, 1, \infty$.	CO3	7 Marks

(OR)

10	a)	Show that the transformation $w = \frac{2z+3}{z-4}$ maps the circle $x^2 + y^2 - 4x = 0$ onto the straight $4u + 3 = 0$.	CO3	7 Marks
	b)	Determine the region in the w-plane corresponding to the triangular region bounded by the lines $x = 0$, $y = 0$ and $x + y = 1$ in the z-plane under the transformation $w = ze^{i\pi/4}$.	CO3	7 Marks

CODE No.:16BT3HS01 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

ENVIRONMENTAL STUDIES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State the different segments of environment and explain each.	CO1	7 Marks
	b)	Analyze the contribution of different disciplines contribute to environmental studies.	CO1	7 Marks
		(OR)		
2	a)	What is deforestation? Explain its causes, effects and control measures.	CO2	7 Marks
	b)	With the help of a case study, explain the effects of over-exploitation of mineral resources.	CO2	7 Marks

UNIT-II

3	a)	Define biodiversity. Explain different levels of biodiversity.	CO1	7 Marks
	b)	Explain the structure and function of ecosystems.	CO1	7 Marks
		(OR)		
4	a)	What is the role of biodiversity in addressing the challenges faced by future generations?	CO2	7 Marks
	b)	Summarize the models of energy flow in an ecosystem.	CO1	7 Marks

UNIT-III

5	a)	State and explain the techniques adopted to control the noise pollution.	CO5	7 Marks
	b)	List out the causes and effects of soil pollution.	CO2	7 Marks
		(OR)		
6	a)	What is meant by Disaster Management? Explain the mitigation measures for earthquakes.	CO5	7 Marks
	b)	Define primary and secondary air pollutants. Give at least four examples for each.	CO2	7 Marks

UNIT-IV

7		What is sustainability? What are the major solutions to attain sustainability?	CO7	14 Marks
		(OR)		
8	a)	Describe in detail about Environmental Protection Act.	CO8	7 Marks
	b)	Explain the concept of Wasteland reclamation.	CO7	7 Marks

UNIT-V

9	a)	Compare the problems associated with population rise in developed and under-developed countries.	CO2	7 Marks
	b)	What is the role of information technology in environment and human health?	CO1	7 Marks
		(OR)		
10		Explain the role of following in sustainable development		
		i) Value education.	CO6	5 Marks
		ii) Women & Child welfare.	CO6	5 Marks
		iii) Human rights.	CO6	4 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY
[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Describe the significance of Managerial Economics.	CO1	14 Marks
		(OR)		
2		Explain the following: i) Law of Demand; ii) Methods of demand forecasting.	CO3	14 Marks

UNIT-II

3		Define cost. Discuss the relation between Total cost, Average cost and Marginal cost.	CO1, CO3	14 Marks
		(OR)		
4	a)	Write the assumptions of Break Even Analysis.	CO2	7 Marks
	b)	From the following information calculate the Break-Even Point in terms of both quantity and value: Total Sales Rs.2,60,000/- Selling price per unit Rs.70/- Variable cost per unit Rs.20/- Fixed costs Rs.50,000/-	CO3	7 Marks

UNIT-III

5		Define perfect competition. Explain about price and output determination in perfect competition.	CO3	14 Marks
		(OR)		
6		Describe the different objectives and policies of pricing.	CO1, CO3	14 Marks

UNIT-IV

7		From the following transactions write journal entries and post them in to ledger in the books of Sankar.	CO2, CO3, CO6	14 Marks

2017	Rs.
Feb. 1 Goods sold for cash	5,200
Feb. 2 Goods purchased for cash	400
Feb. 3 Purchase of goods on credit from Kumar	6,000
Feb. 4 Sale of goods to Manikyam on credit	8,000
Feb. 5 Cash received from Manikyam	5,000
Feb. 6 Cash paid to Kumar	4,000
Feb. 7 Furniture purchased for cash	600

		(OR)		
8		What are the types of capital? Explain them briefly.	CO1, CO5	14 Marks

UNIT-V

9 From the following Trial Balance of M/s Anil Traders as on 31-03-2017, prepare Trading A/c, Profit and Loss A/c and Balance Sheet as on 31-03-2017. CO1, CO5 14 Marks

Particulars	Debit Balance Rs.	Credit Balance Rs.
Capital		1,00,000
Drawings	18,000	
Buildings	15,000	
Furniture	7,500	
Motor van	25,000	
Loan to Siva	15,000	
Interest	450	
Sales		1,00,000
Purchases	75,000	
Stock on 01-04-2016	25,000	
Establishment expenses	15,000	
Freight inward	2,000	
Freight outward	1,050	
Bank overdraft		25,000
Commission received		7,500
Sundry debtors	28,000	
Bank balance	20,500	
Sundry creditors		15,000
	2,47,500	2,47,500

Adjustments:
a) Closing stock was valued at Rs.25,000
b) Depreciate building by 10% and furniture by 5%
c) Provide a reserve for bad debts @ 5%

(OR)

10 Explain the advantages and disadvantages of computerized accounting. CO1, CO6 14 Marks

CODE No.:16BT30101 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

CONSTRUCTION PLANNING AND PROJECT MANAGEMENT

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are different types of plans in construction management?	CO1	7 Marks
	b)	What are the safety measures to be taken during excavation of foundation trenches?	CO6	7 Marks

(OR)

2	a)	Explain briefly about stages of planning by different agencies.	CO1	7 Marks
	b)	Write in detail about minimum wages act of 1948.	CO8	7 Marks

UNIT-II

3	a)	Discuss briefly about various layouts of stores with neat sketches.	CO9	7 Marks
	b)	What do you mean by hauling and what are the different types of equipment used as hauling equipment? Describe briefly.	CO5	7 Marks

(OR)

4	a)	Suggest the sustainable approaches to manage the materials on site.	CO7	7 Marks
	b)	What are the factors to be considered while selecting the construction equipment?	CO5	7 Marks

UNIT-III

5	a)	What is a milestone chart? How does it differ from a bar chart?	CO4	6 Marks
	b)	Explain the following: i) Controlling. ii) Scheduling. iii) Methods of planning. iv) Role of decision in project management.	CO4	8 Marks

(OR)

6 Prepare a bar chart and find the completion time involving the construction of an equipment foundation with a set of activities as follows: CO4 14 Marks

Activities	Time days)
Layout and excavate (foundation)	5
Place mud mat (lean mix)	1
Fabricate shuttering	3
Cut and barbend reinforcement	4
Fix reinforcement	3
Fix shuttering	1
Pour concrete	1

UNIT-IV

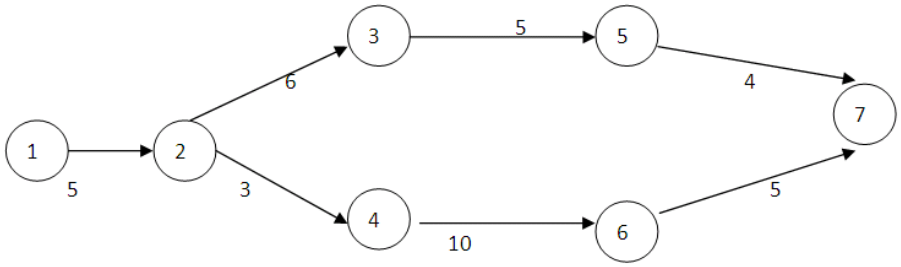
7	a)	What are the advantages and disadvantages of network analysis over other techniques?	CO3	5 Marks
	b)	Prepare a network for a construction project with 12 activities A through L. The precedence relationships are as follows: A and B can be performed in parallel. A must be performed before C, D and E. F cannot be started until D is finished. G follows C and D. F must be finished before H and I can be started. E and H precede J. G and I precede K. L depends on J and K being complete. The project is complete when L and B are completed. Also number the events in the network appropriately.	CO3	9 Marks

(OR)

8	a)	Explain Fulkerson's rules for numbering events of a network.	CO3	7 Marks
	b)	Illustrate hierarchies in the development of a network with an example.	CO4	7 Marks

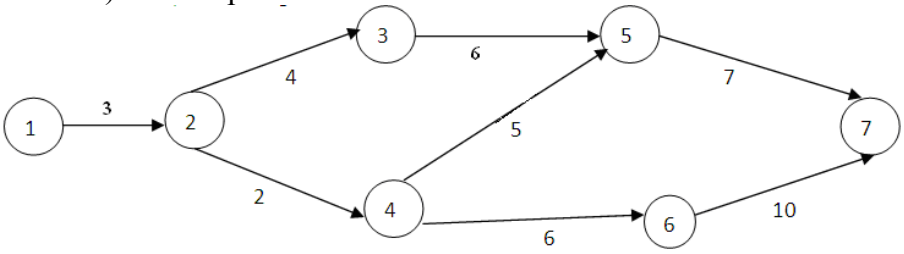
UNIT-V

9	a)	What are the time estimates used in PERT? Explain the significance.	CO3	6 Marks
	b)	Determine the critical path and interfering floats for the given network.	CO2	8 Marks



(OR)

10	a)	The network for a project with estimated duration in days is shown below. Determine i) Earliest expected time ii) Latest allowable occurrence time iii) Slack of each event iv) Critical path	CO3	8 Marks



	b)	What are different types of floats? Explain briefly.	CO1	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State and prove the 'Pascal's Law'.	CO1	7 Marks
	b)	A Cylinder of 0.3m diameter rotates concentrically inside a fixed cylinder of 0.31m diameter. Both the cylinders are 0.3m long. Determine the viscosity of the liquid which fills the space between the cylinders if a torque of 0.9N-m is required to maintain an angular velocity of 60 r.p.m.	CO2	7 Marks
		(OR)		
2	a)	Derive an expression for total pressure and centre of pressure for an inclined plane surface.	CO2	7 Marks
	b)	Determine the total pressure and centre of pressure on isosceles triangle plate of base 4m and altitude 4m when it is immersed vertically in an oil of specific gravity 0.9. The base of the plate coincides with the free surface of oil.	CO2	7 Marks

UNIT-II

3	a)	State Momentum equation. How will you apply Momentum equation for determining the force exerted by a flowing liquid on a pipe bend?	CO1	7 Marks
	b)	In a two dimensional flow field for an incompressible fluid the velocity components are; $u = y^3/3 + 2x - x^2y$; $v = xy^2 - 2y - x^3$. Determine an expression for the stream function 'φ'.	CO2	7 Marks
		(OR)		
4	a)	Explain the classification of fluid flows.	CO1	7 Marks
	b)	A 50^0 reducing bend is connected in a pipe line, the diameters at the inlet and outlet of the bend being 550mm and 250mm respectively. Find the force exerted by water on the bend if the intensity of pressure at inlet to bend is 9.5N/cm^2 and rate of flow of water is 650 litres/sec.	CO2	7 Marks

UNIT-III

5	a)	State and explain Buckingham's π - theorem.	CO4	7 Marks
	b)	A pipe containing water with a diameter of 30m branches into 2 pipes of diameter 20cm and 15cm. If the average velocity in 30cm diameter pipe is 2.5m/s, determine the discharge in this pipe. Also determine the velocity in 15cm pipe if the average velocity in 20cm dia pipe is 2m/s.	CO3	7 Marks
		(OR)		
6	a)	Derive an expression for loss of energy due to friction in a pipe flow.	CO2	7 Marks
	b)	Show by dimensional analysis that power 'P' developed by turbine $P = \rho N^3D^5 \phi [N^2D^3/gH]$, where ρ = mass density, N= speed of revolution, D = diameter of runner, H = head of water and g = acceleration due to gravity.	CO4	7 Marks

UNIT-IV

7	a)	What is specific energy curve? Draw the specific energy curve and derive the expressions for critical depth and critical velocity.	CO5	7 Marks
	b)	The depth of flow of water at a certain section of a rectangular channel of 2.0m wide is 0.3m. The discharge through the channel is 1.5 m^3/s. Determine whether a hydraulic jump will occur, if so, find its height and loss of energy due to hydraulic jump.	CO5	7 Marks

(OR)

8	a)	What are the various types of Hydraulic jumps and briefly explain with neat sketches?	CO5	7 Marks
	b)	A rectangular channel 10m wide carries a discharge of $30m^3/s$. It is laid a slope of 0.0001. It at a section in this channel the depth is 1.6m. How far from this section the depth will be 2.0m. Take manning's n = 0.015.	CO5	7 Marks

UNIT-V

9	a)	Define specific speed of a turbine and derive an expression for the same.	CO3	7 Marks
	b)	The Centrifugal Pump delivers water against a head of 14.5m and a design speed of 1000 r.p.m. The vanes are curved back to an angle of 30^0 with the periphery. The impeller diameter at outlet is 300mm and width at outlet is 50mm. Determine the rate of flow, if manometric efficiency is 95%.	CO3	7 Marks

(OR)

10	a)	Explain the principle and working of a Centrifugal Pump with a neat sketch.	CO3	7 Marks
	b)	Design a Pelton wheel for a head of 60m when running at 200 r.p.m. The pelton wheel develops 95.6475 KW shaft power. The velocity of buckets is 0.45 times the velocity of jet, Overall efficiency is 0.85 and co efficient of velocity is equal to 0.98.	CO3	7 Marks

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II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

MECHANICS OF SOLIDS

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the elongation of prismatic bar of length 'L' due to its own self weight in terms of 'ν' as unit weight of material and Young's modulus of the materials is E.	CO1	7 Marks
	b)	Two vertical rods, one of steel and the other of bronze are each fastened at the upper end at a distance of 50mm apart. Each rod is 1m long and 10mm in diameter. A horizontal rigid bar connects the lower end of the bar and a load of 20KN is so placed that the bar remains horizontal. Find the position of the load on the cross bar and the stresses in each rod. Take modulus of elasticity of steel and brass as 200KN/mm^2 and 70KN/mm^2.	CO1	7 Marks

(OR)

2	a)	Calculate the modulus of rigidity, Poisson's ratio and bulk modulus of a cylindrical bar of diameter 25mm and of length 1.2m if the longitudinal strain in a bar during a tensile test is four times the lateral strain. Take E is 1.2×10^5 N/mm^2.	CO1	7 Marks
	b)	A steel rod 20m long is at a temperature of 30º C. Find the free expansion of the length when the temperature is raised to 90º C. Find the temperature stress produced when the expansion of the rod is prevented. Take $\alpha = 12 \times 10^{-6}$/ºC, E = 200 GN/m^2	CO1	7 Marks

UNIT-II

3		A beam ABCD 10m long is supported at B&C. The overhangs AB and CD are 2m and 3m respectively. The overhang AB carries UDL of 1KN/m and CD carries UDL of 0.5KN/m. in addition there are point loads of 1KN, 2KN and 1KN at a distance of 1.5m, 3m and 8m from A respectively. Find the reactions and draw bending moment and shear force diagrams.	CO2	14 Marks

(OR)

4		A beam of length 'L' carries a uniformly distributed load of 'w' per unit length. The beam is supported on two supports at equal distances from the two ends. Determine the position of the supports, if the bending moment to which the beam is subjected to, is as same as possible. Draw the bending moment, shear force diagrams for the beam.	CO2	14 Marks

UNIT-III

5		Compare the moment of resistance of a beam of square section when it is placed. i) With two sides horizontal. ii) With the diagonal horizontal.	CO2	14 Marks

(OR)

6	a)	A beam of square section is used as a beam with one diagonal horizontal. Find the maximum shear stress in the cross section of the beam. Also sketch the shear stress distribution across the depth of the cross section.	CO2	7 Marks
	b)	**A** rectangular strut is 150mm and 120mm thick. It carries a load of 180KN at an eccentricity of 10mm in a plane bisecting the thickness. Find the maximum and minimum intensities of stress in the section.	CO2	7 Marks

UNIT-IV

7	a)	What do you mean by close coiled helical springs? Deduce an expression for its deflection under the action of an axial load.	CO3	7 Marks
	b)	A hollow shaft of diameter ratio **3/8** is to transmit 375KW at 100 r.p.m. The maximum torque being 20% greater than the mean. The shear stress is not to exceed 60MPa and the twist in a length of 4m is not to exceed 2º. Calculate its external and internal diameters which would satisfy both the above conditions. Take G= 8.5×10^4 N/mm^2.	CO3	7 Marks

(OR)

8		What are the assumptions in the theory of pure torsion? Derive the equation of torsion.	CO3	14 Marks

UNIT-V

9		A built up cylindrical shell of 300mm diameter, 3m long and 6mm thick is subjected to an internal pressure of 2MPa. Calculate the change in length, diameter and volume of the cylinder under that pressure, if the efficiencies of the longitudinal and circumferential joints are 80% and 50% respectively. E= 200GPa, μ= 0.28.	CO3	14 Marks

(OR)

10		An external pressure of 10MPa to a thick cylinder of internal diameter 150mm and external diameter 300mm. If the maximum hoop stress permitted on the inside wall is 35MPa, calculate; i) The maximum internal pressure that can be applied. ii) The change in outside diameter if cylinder has the closed ends. Take E= 210GPA, μ=0.3.	CO3	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

SURVEYING

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the objectives and principles of surveying? Explain in detail.	CO6	6 Marks
	b)	Explain about various stages involved in field work of chain surveying.	CO1	8 Marks
		(OR)		
2	a)	What are the different types of errors in surveying?	CO6	6 Marks
	b)	A chain line ABC crosses a river, the points B and C are on the near and distant banks respectively. A line BD of 40m length is set out at right angles to the chain line at B. If the angle BDC is 80^{0}, find the width of the river.	CO2	8 Marks

UNIT-II

3		Explain about methods of plane table survey with neat sketch.	CO1	14 Marks
		(OR)		
4	a)	What are the conditions in adjustment of a plane table?	CO2	6 Marks
	b)	Explain about various types of leveling instruments.	CO1	8 Marks

UNIT-III

5	a)	Explain the procedure for measurement of vertical angle using a theodolite.	CO1	8 Marks
	b)	What are the different vernier scales used in a theodolite?	CO2	6 Marks
		(OR)		
6		Explain the procedure for recording the computations of a closed traverse PQRST in Gale's traverse table.	CO4	14 Marks

UNIT-IV

7	a)	A series of offsets are taken from a base line to curved boundary at intervals of 20m in the following order 0, 2.59, 3.45, 3.89, 4.45, 3.35, 4.76, 5.32. Calculate the area between the base line, curved boundary line and end offsets using Simpsons' rule and compare the result with trapezoidal rule.	CO3	8 Marks
	b)	Explain briefly about Simpsons' rule to determine the area.	CO1	6 Marks
		(OR)		
8	a)	Explain in detail about the computation of area by double meridian distance method.	CO1	8 Marks
	b)	How do you determine the capacity of a reservoir from a contour plan?	CO1	6 Marks

UNIT-V

9	a)	Explain in detail about wild distomat.	CO5	8 Marks
	b)	What is the difference between EDM mounted theodolite and Electronic tacheometer?	CO1	6 Marks
		(OR)		
10		Explain the procedure for measurement of distance from phase difference method with help of neat sketch.	CO1	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

DC MACHINES

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the expression for e.m.f generated in a D.C generator.	CO2	3 Marks
	b)	A 6 pole machine has an armature with 90 slots and 8 conductors per slot runs at 1000 r.p.m, the flux per pole is 0.05wb. Determine the induced e.m.f, if winding is lap connected and wave connected.	CO4	4 Marks
	c)	Explain the principle and operation of D.C generator.	CO1	7 Marks
		(OR)		
2	a)	Define efficiency. Derive the expression for efficiency of D.C generator. Also derive the condition for maximum efficiency.	CO2	7 Marks
	b)	Briefly explain about various types of losses in D.C machine.	CO2	7 Marks

UNIT-II

3	a)	Define armature reaction. Briefly explain the de-magnetising effect of armature reaction with relevant waveforms.	CO1	7 Marks
	b)	Derive the expression for cross-magnetising AT/pole and de-magnetising AT/pole.	CO2	7 Marks
		(OR)		
4		Explain the process of commutation and in a D.C generator.	CO1	14 Marks

UNIT-III

5	a)	Explain the process of voltage build up in a D.C shunt generator.	CO2	7 Marks
	b)	An 8-pole D.C shunt generator has 778 wave armature conductors running at 500 r.p.m supplies a load of 12.5Ω resistance at a terminal voltage of 250V. The armature resistance is 0.24Ω and field resistance is 250Ω. Find out the armature current, induced e.m.f and flux per pole.	CO4	7 Marks
		(OR)		
6	a)	Explain the internal and external characteristics of D.C series generator, also write its applications.	CO1	7 Marks
	b)	A 440V D.C compound generator has $R_a = 0.5\Omega$, $R_{sh} = 200\ \Omega$, $R_{se} = 1\Omega$ respectively. Calculate the generated e.m.f when connected as short shunt and long shunt.	CO4	7 Marks

UNIT-IV

7	a)	Define torque and derive the expression for gross torque, armature torque, shaft torque developed in a D.C motor.	CO2	7 Marks
	b)	Briefly explain the characteristics of D.C shunt motor with necessary equations and waveforms.	CO2	7 Marks
		(OR)		
8	a)	Explain the Ward-Leonard method of speed control of D.C shunt motor.	CO5	7 Marks
	b)	A 200V D.C series motor runs at 500 r.p.m when taking a current of 25A. The resistance of armature is 0.5Ω and that of field is 0.3Ω. If the current remains constant, calculate the resistance required to reduce the speed to 250 r.p.m.	CO3	7 Marks

UNIT-V

9	a)	Briefly explain the fields test on two D.C series machines.	CO1	8 Marks
	b)	When running on no-load, a 400V shunt motor takes 5A. Armature resistance is 0.5Ω and field resistance is 200Ω. Find the output of the motor and efficiency when running on full load and taking a current of 50A.	CO4	6 Marks

(OR)

10		List out the direct and indirect methods of testing of D.C machine and explain the Hopkinson test method of testing in detail.	CO1	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

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)	Show that div (D) = ρ_v.	CO1	7 Marks
	b)	Let $\vec{D}$=**4xy** $\hat{x}$ +**2(x²+z²)** $\hat{y}$ +**4yz** $\hat{z}$ C/m². Evaluate surface integrals to find the total charge enclosed in the rectangular parallelepiped **0 < x < 2, 0 < y < 3, 0 < z < 5**m.	CO3	7 Marks
		(OR)		
2	a)	Define Electric potential and obtain the relation between Electric potential and Electric Field Intensity.	CO1	7 Marks
	b)	Determine ρ_v at (0.3, 0.4, 0.5) due to $\vec{D} = 20xy^2(z+1)\hat{x} + 20x^2y(z+1)\hat{y} + 10x^2y^2\hat{z}$ C/m².	CO3	7 Marks

UNIT-II

3	a)	Derive the expression for energy density in electrostatic field.	CO1	7 Marks
	b)	Three point charges ***–nC***, ***4nC*** and ***3nC*** are located at (0, 0, 0), (0, 0, 1) and (1, 0, 0) respectively. Find the energy in the system.	CO3	7 Marks
		(OR)		
4	a)	Define a boundary condition and mention its application. Obtain the boundary conditions for tangential and normal components between two perfect dielectric materials.	CO4	7 Marks
	b)	A homogeneous dielectric **(ε_r=2.5)** fills region **1(x < 0)** while region **2(x>0)** is free space. If $\boldsymbol{D_1}$=**12** $\boldsymbol{a_x}$-**10** $\boldsymbol{a_y}$+**4** $\boldsymbol{a_z}$***n****C*/*m*², find $\boldsymbol{D_2}$ and θ_2.	CO3	7 Marks

UNIT-III

5	a)	By applying appropriate law, determine the field due to a circular loop.	CO4	7 Marks
	b)	Find the total current in a circular conductor of radius 4mm if the current density varies according to $\boldsymbol{J}$=**10⁴/r** ***A/m²***.	CO3	7 Marks
		(OR)		
6	a)	Explain scalar magnetic potential and vector magnetic potential.	CO1	7 Marks
	b)	A circular loop located on $x^2 + y^2 = 16, z = 0$ carries a direct current of 15A along a_ϕ. Determine magnetic field intensity at (0, 0, 7) and (0, 0, –3).	CO4	7 Marks

UNIT-IV

7	a)	Derive and explain the importance of Lorentz's force equation.	CO3	7 Marks
	b)	A small current loop L_1 with magnetic moment 5 A.m² is located at the origin while another loop current L_2 with magnetic moment 3 $\hat{y}$ A.m² is located at (4, –3, 10) m. Determine the torque on L_2.	CO4	7 Marks
		(OR)		
8		Compare electric dipole and magnetic dipole. Obtain the expression for magnetic dipole moment.	CO4	14 Marks

UNIT-V

9		Write and explain Maxwell's equations in integral and point form and also make their word statements for time varying fields.	CO1	14 Marks
		(OR)		
10		If $\sigma = 0$, $\varepsilon = 2.5\ \boldsymbol{\varepsilon_o}$ and μ=10 $\boldsymbol{\mu_o}$, determine whether or not the following pairs of fields satisfy Maxwell's equations.	CO4	14 Marks
		i) $\hat{E} = 2y\hat{y};\ \vec{H} = 5x\hat{x}$		
		ii) $\vec{E} = 100\sin(6\times 10^7 t)\sin z\hat{y};\ \vec{H} = -0.1328\cos(6\times 10^7 t)\cos z\hat{x}$		

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

SIGNALS, SYSTEMS AND NETWORKS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

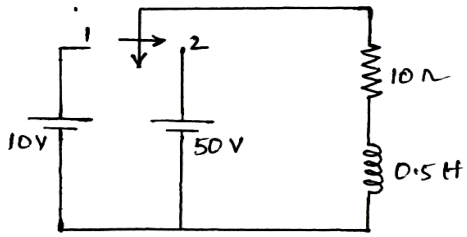
UNIT-I

1	a)	Test the stability of the system whose impulse response is $h(t) = \left(\frac{1}{2}\right)^t u(t)$.	CO2	7 Marks
	b)	Find the convolution of the following signals: $x(t) = b^t u(t)$ and $h(t) = a^t u(t)$.	CO2	7 Marks

(OR)

2	a)	Determine whether the given system is time invariant or not. i) $y(t) = x(t) + x(t-1)$. ii) $y(t) = x\left(\frac{t}{2}\right)$.	CO4	8 Marks
	b)	Define causality and test the causality of the system given by i) $y(t) = (\cos(3t))x(t)$. ii) $y(t) = x\left(\frac{t}{3}\right)$.	CO1	6 Marks

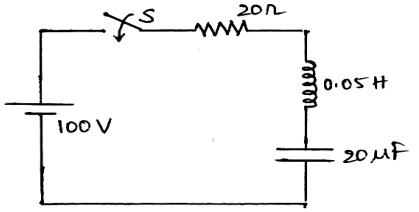
UNIT-II

3	a)	In a circuit shown in fig. Determine the current $i(t)$ when the switch is changed from position 1 to 2. The switch is moved from 1 to 2 at time $t = 0$. Use Laplace transforms. 	CO5	9 Marks
	b)	Find the Inverse Laplace transform $f(t)$ for the function $F(S) = \frac{2}{(s+1)(s+5)}$.	CO2	5 Marks

(OR)

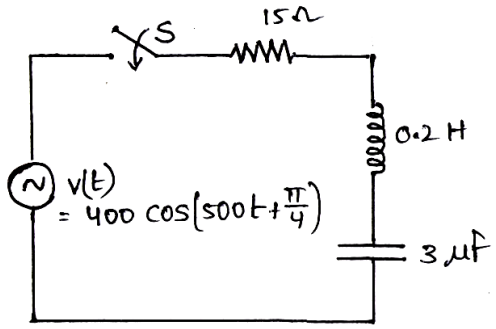
4	a)	Distinguish between Fourier series and Fourier Transforms.	CO1	7 Marks
	b)	Determine Fourier transform of the function $x(t) = (u(t+2) - u(t-2))\cos 2\pi t$.	CO5	7 Marks

UNIT-III

5	a)	Derive the expressions for current and voltage across capacitor of a series RC circuit for a DC excitation.	CO1	8 Marks
	b)	The circuit shown in fig. consists of resistance, capacitance and inductance in series with a 100V constant source. When the switch is closed at $t = 0$, Find the current transient. 	CO6	6 Marks

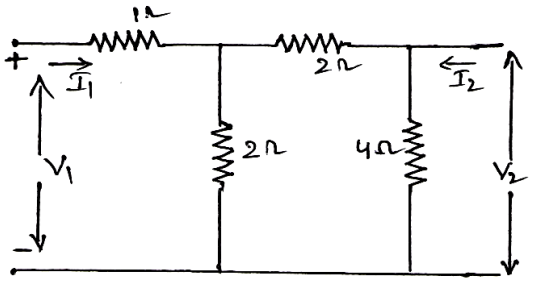
(OR)

6	a)	Derive the expression for current of a series RL circuit for a sinusoidal input.	CO1	7 Marks
	b)	In the circuit shown in fig. determine the complete solution for the current, when the switch S is closed at t = 0. Applied voltage is $v(t) = 400\cos\left(500t + \frac{\pi}{4}\right)$. Resistance R = 15Ω, inductance L=0.2 H and Capacitance C=3μF.	CO6	7 Marks



UNIT-IV

7	a)	The impedance parameters of a two port network are Z_{11} = 10Ω, Z_{22} = 15Ω, $Z_{12} = Z_{21}$ = 5Ω. Compute the equivalent T network and ABCD parameters.	CO4	7 Marks
	b)	Two identical sections of the network shown in fig. are connected in parallel. Obtain Y parameters of the combination.	CO4	7 Marks



(OR)

8	a)	ABCD parameters in terms of hybrid parameters for a generalized network.	CO4	7 Marks
	b)	Two networks shown in fig. (a) and (b) are connected in series. Obtain the Z parameters of the combination. Also verify by direct calculation.	CO4	7 Marks

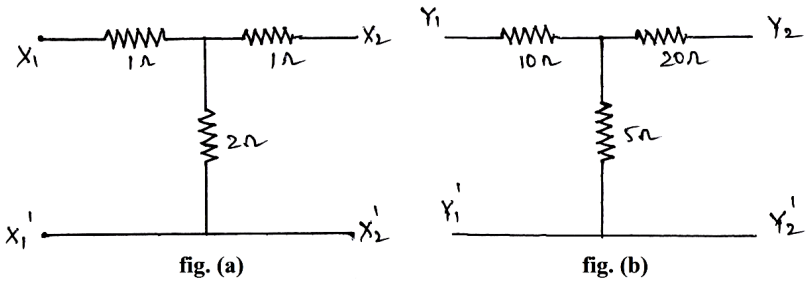


fig. (a) fig. (b)

UNIT-V

9	a)	Derive the design equations for m-derived high pass filter.	CO2	8 Marks
	b)	Design a high pass π-section filter and high pass T-section filter having a cut-off frequency of 1KHz to operate with a terminal load resistance of 600Ω.	CO3	6 Marks

(OR)

10	a)	Derive the design equations for a band elimination filter.	CO2	7 Marks
	b)	Design a K-type band pass filter having a design impedance of 500Ω and cut-off frequencies f_1 = 1KHz and f_2 = 10KHz.	CO3	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

ELECTRICAL TECHNOLOGY

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the **emf** equation of a DC generator.	CO2	7 Marks
	b)	A 4-pole, lap-wound, DC shunt generator has a useful flux per pole of 0.07 Wb. The armature winding consists of 220 turns each of 0.004 Ω resistance. Calculate the terminal voltage when running at 900 r.p.m. if the armature current is 50 A.	CO4	7 Marks
		(OR)		
2	a)	What are various losses in a DC machine? Explain each one in detail.	CO2	7 Marks
	b)	Describe how Swinburne's test is conducted on DC machine. State its advantages and disadvantages.	CO2	7 Marks

UNIT-II

3	a)	Develop the equivalent circuit of a single phase transformer.	CO2	6 Marks
	b)	Consider a 20 kVA, 2200/220 V, 50 Hz transformer. The O.C./S.C. test results are as follows : O.C. test : 220 V, 4.2 A, 148 W (L.V. side) S.C. test: 86 V, 10.5 A, 360 W (H.V. side). Determine regulation at 0.8 p.f. lagging and at full load. What is the p.f. on short-circuit?	CO4	8 Marks
		(OR)		
4	a)	Derive the condition for maximum efficiency in a transformer.	CO2	6 Marks
	b)	A 4 kVA, 200/400 V, single-phase transformer takes 0.7 A and 65 W on open circuit. When the low-voltage winding is short-circuited and 15 V is applied to the high-voltage terminals, the current and power are 10 A and 75 W respectively. Calculate the full-load efficiency at unity power factor and full-load regulation at 0.80 power-factor lagging.	CO4	8 Marks

UNIT-III

5	a)	A three-phase, balanced delta-connected load of (4+j8) Ω is connected across a 400 V, 3-ϕ balanced supply. Determine the phase currents and line currents. Assume the phase sequence to be RYB. Also calculate the power drawn by the load.	CO4	7 Marks
	b)	Explain the measurement of three phase power using two wattmeter method if the load is balanced. Sketch phasor diagram.	CO2	7 Marks
		(OR)		
6	a)	An unbalanced four-wire, star-connected load has a balanced voltage of 400 V, the loads are $\mathbf{Z_1=(4+j8)\ \Omega}$, $\mathbf{Z_2=(3+j4)\ \Omega}$, $\mathbf{Z_3=(15+j20)\ \Omega}$. Calculate the i) Line currents. ii) Current in the neutral wire. iii) The total power.	CO4	7 Marks
	b)	Derive the expressions of phase and line quantities in delta connected network.	CO2	7 Marks

UNIT-IV

7	a)	Explain how rotating magnetic field in developed in three phase induction motors.	CO1	7 Marks
	b)	Explain the different methods of starting three phase induction motor.	CO2	7 Marks
		(OR)		

8	a)	Explain the principle of operation of a synchronous machine.	CO2	7 Marks
	b)	Calculate the EMF of a 4 pole, 3-phase, star connected alternator running at 1500 r.p.m from the following data: Flux per pole = 0.3 Wb, Total number of slots= 48, Conductors per slot (in two layers) = 4, Coil span=150°.	CO4	7 Marks

UNIT-V

9	Explain with a neat diagram, the working of start single phase induction motor and its principle of operation.	CO2	14 Marks

(OR)

10	Explain why the starting torque of a capacitor start induction run motor is better than that if a resistance start induction motor.	CO2	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

ENGINEERING METALLURGY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the production of wrought iron in puddling furnace.	CO1	10 Marks
	b)	List the advantages of electric arc furnace over other furnaces.	CO1	4 Marks
		(OR)		
2	a)	Draw a neat sketch of Cupola furnace and explain various zones present in it.	CO1	10 Marks
	b)	What are the main functions of coke and limestone in the charge of blast furnace?	CO1	4 Marks

UNIT-II

3	a)	With neat sketch, explain the Iron-carbon equilibrium diagram showing all the salient features.	CO2	7 Marks
	b)	Discuss Hume Rothery rules of solid solubility in detail.	CO2	7 Marks
		(OR)		
4	a)	Explain any two of the following cooling curves with neat sketch indicating various salient points on it: i) Pure metal, ii) Solid solution, iii) Eutectic alloy.	CO2	10 Marks
	b)	Why are alloys produced? Explain why alloys find more applications than pure metals.	CO2	4 Marks

UNIT-III

5		Draw TTT diagram for a eutectoid steel and explain the effect of cooling rate on the transformation products obtained.	CO3	14 Marks
		(OR)		
6	a)	Normalized steels are stronger than annealed steels. Explain.	CO3	7 Marks
	b)	Discuss the significance of sub zero treatment in detail.	CO3	7 Marks

UNIT-IV

7	a)	Distinguish between flame hardening and induction hardening.	CO4	4 Marks
	b)	Explain about scanning electron microscope with neat sketch.	CO4	10 Marks
		(OR)		
8	a)	Write short notes on the following i) Carbonitriding, ii) Cyaniding.	CO4	8 Marks
	b)	Discuss various steps in metallographic specimen preparation.	CO4	6 Marks

UNIT-V

9	a)	Differentiate between isostatic compaction and roll compaction.	CO5	7 Marks
	b)	Write short note on any three of the following: i) Atomization, ii) Milling, iii) Electrolysis.	CO5	7 Marks
		(OR)		
10	a)	What are various characteristics of metal powders? Explain them in detail.	CO5	9 Marks
	b)	Why is the particle size distribution important in the packing of powders?	CO5	5 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

KINEMATICS OF MACHINERY

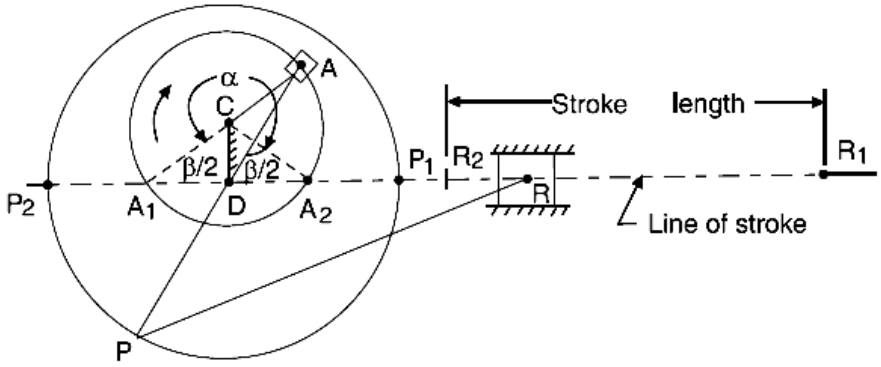
[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) A Whitworth quick return motion mechanism, as shown in figure, has the following particular: Length of stroke = 160 mm; Driving crank length=40 mm; Time of cutting stroke / Time of return stroke = 1.8. Find the lengths of CD and PD. Also determine the angles α and β. CO1 7 Marks



b) Sketch and explain inversions of a double slider crank chain. CO1 7 Marks

(OR)

2 a) "There are various ways of classifying kinematic pairs". Elaborate with examples mentioning DOF of each pair. CO1 8 Marks

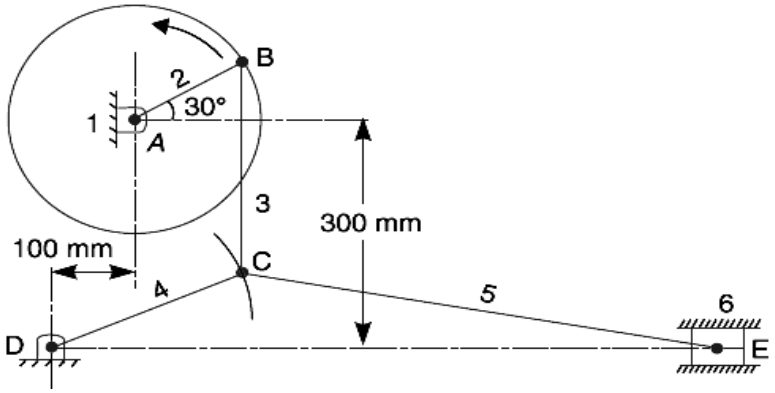
b) Distance between two parallel shafts connected by Oldham's coupling is 30mm. Determine maximum speed of sliding of tongue of intermediate piece in the slot in the flange if driving shaft is run at 200 r.p.m. CO1 6 Marks

UNIT-II

3 The lengths of various links of the mechanism as shown in figure are: AB=150mm; BC = 300mm; CD = 225mm; and CE = 500mm. When the crank AB rotates in the anticlockwise direction at a uniform speed of 240 r.p.m.; find CO2 14 Marks

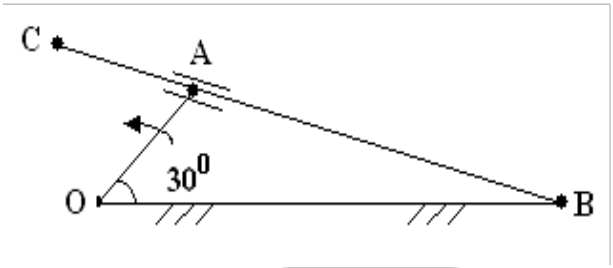
i) Velocity of the slider E.

ii) Angular velocity of the links BC and CE by Instantaneous centre method.



(OR)

4	a)	Explain what is meant by Coriolis acceleration.	CO2	4 Marks
	b)	In the mechanism shown in figure, the crank OA makes 200 r.p.m in the counter clockwise direction. Find angular velocity of link BA and velocity and acceleration of point C. Take OA=60mm, BC=300mm and OB= 220mm	CO2	10 Marks



UNIT-III

5	a)	Describe the working of Davis steering gear mechanism with neat sketch. Derive the condition for correct steering of the above mechanism.	CO3	8 Marks
	b)	The distance between the steering pivots of a Davis steering gear is 1.3m. The wheel base is 2.75m. What will be the inclination of the track arms to the longitudinal axis of the vehicle if it is moving in a straight path?	CO3	6 Marks

(OR)

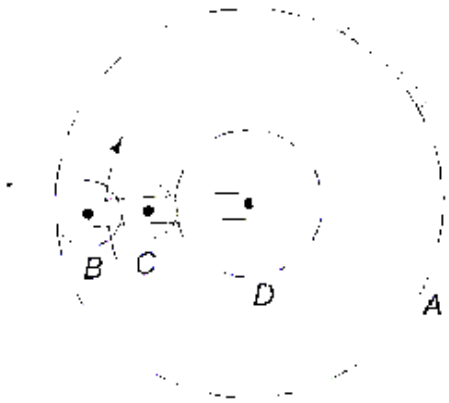
6	a)	The driving shaft of a Hooke's joint has a uniform angular speed of 200 r.p.m. Determine the maximum permissible angle between the axes of the shaft to permit a maximum variation in speed of the driven shaft by 5% of the mean speed.	CO3	7 Marks
	b)	Sketch and explain Ackermann's Steering gear mechanism.	CO3	7 Marks

UNIT-IV

7		A pair of 200 pressure angle, 4mm module gears in mesh have the following data: Speed of pinion = 200 r.p.m, Number of teeth on pinion = 24, Number of teeth on gear = 28. Determine the addendum of the gears if the path of approach and the path of recess on each side are 40% of the maximum possible length each. Also determine the arc of contact and the maximum velocity of sliding between the mating surfaces.	CO4	14 Marks

(OR)

8		An epicyclic gear train, as shown in figure, is composed of a fixed annular wheel A having 150 teeth. The wheel A is meshing with wheel B which drives wheel D through an idler wheel C, D being concentric with A. The wheels B and C are carried on an arm which revolves clockwise at 100 r.p.m about the axis of A and D. If the wheels B and D have 25 teeth and 40 teeth respectively, find the number of teeth on C and the speed and sense of rotation of C.	CO4	14 Marks



UNIT-V

9	A cam operating a knife - edged follower has the following data. Follower moves outwards through 50mm during 120° of cam rotation. Follower dwells for the next 45°. Follower returns of its original position during next 90°. Follower dwells for the rest of the rotation. The displacement of the follower is to take place with cycloidal motion during the outward and uniform acceleration and deceleration motion during the return strokes. The least radius of the cam is 50mm. Draw the profile of the cam with radial follower, if the cam rotates at 300 r.p.m, determine maximum velocity and acceleration of the follower during the outward stroke and the return stroke.	CO5	14 Marks

(OR)

10	A cam operating a roller follower with radius of 15mm has the following data. i) Follower moves outwards through 40mm during 90° of cam rotation. ii) Follower dwells for the next 45°. iii) Follower returns of its original position during next 90°. iv) Follower dwells for the rest of the rotation. The displacement of the follower is to take place with SHM during the outward and the return strokes. The least radius of the cam is 50mm. Draw the profile of the cam when the axis of the follower is offset 25mm towards right from the cam axis. If the cam rotates at 200 r.p.m.	CO6	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

MANUFACTURING TECHNOLOGY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Sketch the cross section of a sand mould which is ready for pouring and label the various important parts	CO1	7 Marks
	b)	Explain the use of follow board pattern with a neat sketch.	CO2	7 Marks
		(OR)		
2	a)	Give a brief write-up on the following casting terms: sprue, gate, riser and runner.	CO3	7 Marks
	b)	What is draft allowance? How is it provided for patterns?	CO2	7 Marks

UNIT-II

3	a)	With a neat sketch, explain the procedure of centrifugal casting method.	CO3	7 Marks
	b)	Write a short note of fettling process in casting.	CO3	7 Marks
		(OR)		
4	a)	Mention the causes and remedies of the following sand-casting defects: blow holes, hot tears and misruns.	CO4	7 Marks
	b)	Explain the merits, demerits and applications of shell moulding process.	CO5	7 Marks

UNIT-III

5	a)	List the various processes of metal working processes. What are the advantages of hot working over cold working of metals?	CO5	7 Marks
	b)	Explain with sketches the difference between direct and indirect extrusion.	CO5	7 Marks
		(OR)		
6	a)	Explain various types of dies used in sheet metal operations.	CO4	7 Marks
	b)	Briefly explain the principle of rolling with a neat sketch.	CO4	7 Marks

UNIT-IV

7	a)	Differentiate TIG and MIG systems of arc-welding process.	CO1	7 Marks
	b)	Sketch and explain the construction and working of Laser beam welding process.	CO1	7 Marks
		(OR)		
8	a)	With a neat sketch about spot welding process.	CO4	7 Marks
	b)	What are the specific advantages and disadvantages of resistance welding process?	CO4	7 Marks

UNIT-V

9	a)	Name the common additives used in plastics? Explain about few of them.	CO5	7 Marks
	b)	Describe about the construction of two-plate mould used in injection moulds.	CO1	7 Marks
		(OR)		
10	a)	Explain the extrusion blow moulding process.	CO4	7 Marks
	b)	Describe the working principle of transfer moulding process with a neat sketch.	CO5	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

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)	Discuss various mechanical properties of a material.	CO1	4 Marks
	b)	A steel rod of 25mm diameter passes through a brass tube of 25mm internal diameter and 35mm external diameter. The nut on the rod is tightened until a stress of 10MPa is developed in the rod. The temperature of the tube is then raised by 60 ^{0}C. What are the final stresses in the rod and the tube? E_s = 200 GPa; E_b = 80 GPa; α_s = 11.7 x 10^{-6}/ ^{0}C; α_b = 19 x 10^{-5}/ ^{0}C.	CO5	10 Marks
		(OR)		
2	a)	A bar of steel is of length **l** and is of uniform thickness **t**. The width of the bar varies uniformly from **a** at one end to **b** at the other end. Find the extension of the rod when it carries an axial pull **P**.	CO2	4 Marks
	b)	Two vertical rods one of steel and the other of copper are each rigidly fixed at the top and are 50cm apart. Diameters of steel rod and copper rod are 2cm and 4cm respectively and length of each rod is 400cm. A cross bar fixed to the rods at the lower ends, carries a load of 5000N such that the cross bar remains horizontal even after loading. Find the stresses in each rod and the position of load on the bar. E_s = 200 GPa; E_c = 100 GPa.	CO5	10 Marks

UNIT-II

3		A 30m long horizontal beam carries a uniformly distributed load of 1KN/m on the whole length along with a point load of 3KN at the right end. The beam is freely supported at the left end. Determine the position of the second support so that the maximum bending moment on the beam is as small as possible. Also draw shear force and bending moment diagrams.	CO6	14 Marks
		(OR)		
4		A simply supported beam of span 5m carries a uniformly increasing load of 800N/m at one end to 1600N/m at other end. Draw shear force and bending moment diagram. Also calculate the position and magnitude of maximum bending moment.	CO6	14 Marks

UNIT-III

5	a)	A square of side **'a'** is used as a beam with its diagonal in horizontal position. If shear force is **S**, determine the value and location of maximum shear stress occurring at the section. Also find shear stress at Neutral axis.	CO1	5 Marks
	b)	The tension flange of a girder of I section is 240mm x 40mm, whereas the compression flange 120mm x 20mm. The web is 300mm deep and 20mm thick. If the girder is used as a simply supported beam of 8m span, determine the load per metre run if the allowable stress is 90MPa in compression and 30MPa in tension.	CO3	9 Marks
		(OR)		

6	a)	Compare the resistance to torsion of a hollow shaft to that of a solid shaft if the inside diameter of the hollow shaft is two-third of the external diameter and the two shafts have the same material and weight and of equal length.	CO1	5 Marks
	b)	A hollow shaft with inner diameter to outer diameter ratio of 0.78 is to transmit 20KW at a speed of 200 r.p.m. Assume the allowable shear stress for the shaft material as 42MPa and the limiting angle of twist in 1.8m length of shaft as 2^0. Determine the inner and outer diameters of the shaft. G = 84GPa. Also compare the percentage saving of material with solid shaft.	CO3	9 Marks

UNIT-IV

7	a)	Derive the differential equation of the deflected curve.	CO1	5 Marks
	b)	A beam AB of 6m span is simply supported at the ends. It carries a concentrated load of 6KN at a distance of 2m from the left support an a uniformly distributed load of 2KN/m at the right half of the beam. Find the deflection at the mid span and slope at the left end support. E = 200 GPa and I = 40 x 10^6 mm^4.	CO4	9 Marks

(OR)

8		At a point in a strained material, the principal tensile stresses acting on two perpendicular planes are 80N/mm^2 and 40N/mm^2. Determine the normal stress, shear stress and resultant stress on a plane inclined at 20^0 with major principal plane. What will be the intensity of stress which acting alone will produce the same maximum strain. Poisson's ratio is 0.25.	CO4	14 Marks

UNIT-V

9	a)	Derive the stresses induced in a thin cylinder of internal diameter **d** and thickness **t** subjected to an internal pressure **p**.	CO4	4 Marks
	b)	A cylindrical shell is 3m long, 1m in diameter and the thickness of metal is 10mm. It is subjected to an internal pressure of 150N/cm^2. Calculate the change in dimensions of the shell and the maximum intensity of shear stress induced. E= 200 GPa and Poissons ratio is 0.3.	CO5	10 Marks

(OR)

10		Derive lames equations for the analysis of thick cylinders with assumptions.	CO4	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

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 a thermodynamic system. What are the different types of thermodynamic systems? Give examples for each.	CO1	6 Marks
	b)	A mass of gas is compressed in a quasi static process from 80 kPa, 0.1 m^3 to 0.4 MPa, 0.03 m^3. Assuming that the pressure and volume are related by pv^n = constant, find the work done by the gas system.	CO1	8 Marks

(OR)

2	a)	Explain the similarities and differences between Heat transfer and Work transfer.	CO1	6 Marks
	b)	A system expands from the state 1 to state 2 in a reversible non flow process as defined below. i) pv^n = constant. ii) A constant pressure process followed by a constant volume process. iii) A constant volume process followed by a constant pressure process. Show these processes on a p-v diagram and find the ratio of work done in these processes, if $P_1:P_2$= 5:2 and $V_2:V_1$ = 2:1 and n = 1.4.	CO1	8 Marks

UNIT-II

3	a)	Show that Internal energy is a property of a system.	CO2	6 Marks
	b)	A mass of 8 kg expands within a flexible container so that the p-v relationship is of the form $pv^{1.2}$ = constant. The initial pressure is 1000 kPa and the initial volume is 1 m^3. The final pressure is 5 kPa. If specific internal energy of the gas decreases by 40 kJ/kg, find the heat transfer in magnitude and direction.	CO2	8 Marks

(OR)

4	a)	State and prove the two Carnot principles.	CO2	6 Marks
	b)	A Carnot engine absorbs 200 J of heat from a reservoir at the temperature of the normal boiling point of the water and rejects heat to a reservoir at temperature of triple point of water. Find the heat rejected, the work done by the engine and the thermal efficiency.	CO2	8 Marks

UNIT-III

5	a)	State and discuss the importance of principle of increase of Entropy.	CO4	6 Marks
	b)	Two kg of water at 80^0C are mixed adiabatically with 3 kg of water at 30^0C in a constant pressure process of 1 atm. Find the increase in the entropy of the total mass of water due to the mixing process. C_p of water = 4.187 kJ/kg.K	CO4	8 Marks

(OR)

6	a)	Discuss 2nd law efficiency and explain how is it different from 1st law efficiency.	CO4	6 Marks
	b)	0.2 kg of air at 300^0C is heated reversibly at constant pressure to 2066 K. Find the available and unavailable energies of the heat added. Take T_0=30^0C and C_p = 1.005 kJ/kg K.	CO4	8 Marks

UNIT-IV

7	a)	Plot phase equilibrium diagram for H_2O on P-T chart and explain Triple point on it.	CO3	6 Marks
	b)	A vessel of volume 0.04 m^3 contains a mixture of saturated water and saturated steam at a temperature of 250^0C. The mass of liquid present is 9 kg. Find the pressure, mass, specific volume, enthalpy, entropy and internal energy.	CO3	8 Marks

(OR)

8	a)	Discuss enthalpy and entropy for gas mixtures.	CO3	6 Marks
	b)	A certain gas has C_p = 1.968 and C_v = 1.507 kJ/kg.K. Find its molecular weight and the gas constant. A constant volume chamber of 0.3 m^3 capacity contains 2 kg of this gas at 5^0C. Heat is transferred to this gas until the temperature is 100^0C. Find the work done, the heat transferred and the changes in internal energy, enthalpy and entropy.	CO3	8 Marks

UNIT-V

9	a)	Sketch the Stirling cycle on p-v and T-s charts and obtain expression for efficiency.	CO5	6 Marks
	b)	An engine equipped with a cylinder having a bore of 15cm and a stroke of 45cm operates on Otto cycle. If the clearance volume is 2000cm^3, compute the air standard efficiency.	CO5	8 Marks

(OR)

10	a)	Define MEP and obtain an expression for MEP of an Otto cycle.	CO5	6 Marks
	b)	A diesel engine has a compression ratio of 14 and cut off takes place at 6% of the stroke. Find the air standard efficiency of the cycle.	CO5	8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

ELECTRONIC CIRCUIT ANALYSIS AND DESIGN

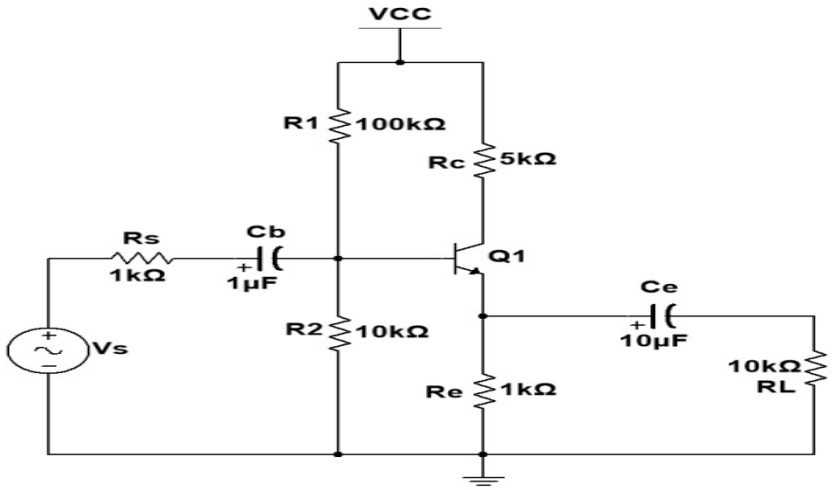
[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		For the transistor shown below, Compute A_i, A_v, A_{vs}, Z_i and Z_o. Assume h_{ic}=1100Ω, h_{fc}=100, h_{rc}=1 and h_{oc}=24×10^{-6} mhos.	CO4	14 Marks



(OR)

2	a)	With a neat sketch, explain about the cascade amplifiers.	CO1	7 Marks
	b)	Two FET based amplifiers with gains of 30 dB are cascaded together. Find the overall gain. Also find bandwidth of the overall circuit, if individual lower and higher 3 dB frequencies are 20 Hz and 20 kHz respectively.	CO4	7 Marks

UNIT-II

3	a)	Draw the equivalent circuit of hybrid-model and derive the expression for hybrid -π impedance in terms of low frequency h-parameters.	CO1	8 Marks
	b)	Derive the equation for g_m, which gives relation between g_m, I_C and temperature.	CO2	6 Marks

(OR)

4		Derive the expressions for voltage gain, current gain, input and output resistances of a CD amplifier at high frequencies.	CO2	14 Marks

UNIT-III

5	a)	Derive expressions for voltage gain, input resistance and output resistance for voltage series feedback amplifier with the help of neat diagram.	CO1	8 Marks
	b)	A negative feedback of β=2.5×10^{-3} is applied to an amplifier of open loop gain 1000. Calculate the change in overall gain of the feedback amplifier if the gain of the internal amplifier is reducing by 20%.	CO2	6 Marks

(OR)

6	a)	Derive the expression for frequency and conditions of oscillation of RC phase shift oscillator using BJT.	CO2	10 Marks
	b)	A phase shift oscillator using BJT has the following circuit constants R_1=R_2=R_3=3.2KΩ, R_L=10KΩ, C_1=C_2=C_3=20nF. Calculate the frequency of oscillations.	CO2	4 Marks

UNIT-IV

7	a)	Derive the expression for maximum theoretical efficiency in the case of class B push pull amplifier. Why is it named so? What are its advantages and disadvantages?	CO2	8 Marks
	b)	Design a class B power amplifier to deliver 30W to a load resistor R_L=40Ω using a transformer coupling. V_m=V_{cc}=30V. Assume reasonable data wherever necessary.	CO3	6 Marks
		(OR)		
8	a)	What is class A amplifier? Derive the expression for maximum value of efficiency.	CO1	10 Marks
	b)	$V_{CE(max)}$=15V, $V_{CE(min)}$=1V, find the overall efficiency for i) Series–fed load ii) Transformer-coupled load	CO4	4 Marks

UNIT-V

9	a)	Draw the equivalent circuit of capacitance coupled single tuned amplifier and derive the equation for voltage gain.	CO1	10 Marks
	b)	Differentiate the single tuned and double tuned amplifiers.	CO1	4 Marks
		(OR)		
10	a)	What is a Q-factor? Derive the expression for Q-factor of a capacitor.	CO1	6 Marks
	b)	Explain the effect of cascading single tuned amplifiers on bandwidth.	CO2	8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

SIGNALS AND SYSTEMS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

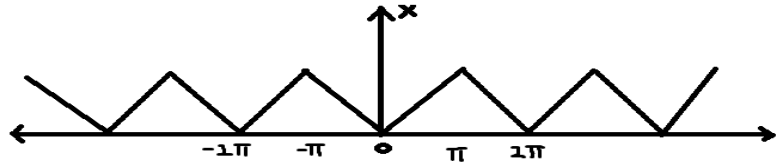
1	a)	Illustrate the following classification of systems with examples i) Static versus Dynamic systems. ii) Time variant versus Time-invariant system.	CO1	6 Marks
	b)	Compute the convolution $y[n] = x[n]*h[n]$, if the input sequence and impulse responses are $x[n] = (0.5)^n u[n]$ and $h[n] = 2u[n]$ respectively.	CO4	4 Marks
	c)	Determine the power for each of the following signals. i) $5 + 10\cos(100\pi t + \pi / 3)$ ii) $10\cos(100\pi t + \pi/3) + 16\sin(100\pi t + \pi/5)$	CO4	4 Marks

(OR)

2	a)	Define the unit impulse, unit step and unit ramp sequences with mathematical expression and graphical representation.	CO1	4 Marks
	b)	For the following systems, determine whether the system is causal, linear, time-invariant and memory less. i) $y[n] = \cos\{x[n]\}$, ii) $y[n] = x[-n-2]$, iii) $y[n] = e^{x[n]}$.	CO3	10 Marks

UNIT-II

3	a)	Find the Fourier series expansion for the waveform shown in figure.	CO3	7 Marks

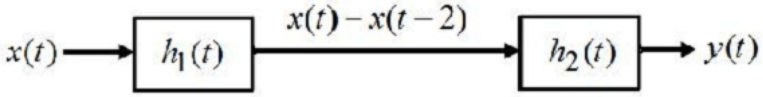


The waveform is $x(t) = \begin{cases} -\dfrac{At}{\pi} & for \quad -\pi \le t \le 0 \\ \dfrac{At}{\pi} & for \quad 0 \le t \le \pi \end{cases}$

	b)	Find the Impulse response and Step response of continuous time LTI system is described by the equation $\dfrac{dy(t)}{dt} + 5y(t) = x(t)$.	CO2	7 Marks

(OR)

4	a)	Determine the Fourier transform of the signal $\boldsymbol{x(t) = e^{-a\lvert t\rvert}}$, $\boldsymbol{a > 0}$.	CO3	7 Marks
	b)	A cascaded system is shown below. Suppose that $h_1(t) = h_2(t)$, find and plot output $y(t)$ when $x(t) = \delta(t)$.	CO4	7 Marks



UNIT-III

5	a)	Differentiate Auto correlation and Cross correlation.	CO1	7 Marks
	b)	Justify that the convolution of $\boldsymbol{e^{-at}\,u(t) * e^{-bt}\,u(t)}$ is $\dfrac{1}{(b-a)}[e^{-at}u(t) - e^{-bt}u(t)]$.	CO4	7 Marks

(OR)

6	a)	Explain, how to extract the signal in the presence of noise.	CO5	7 Marks
	b)	An excitation and impulse response of the system are given. Find the responses $x(t) = 2u(t) - 2u(t-2)$; $h(t) = 3u(t-5) - 3u(t-1)$	CO4	7 Marks

UNIT-IV

7	a)	A signal has Laplace transform $X(s) = \frac{s+2}{s^2+4s+5}$. Find Laplace transform $Y(s)$ of the signal $\boldsymbol{y(t) = e^{-t}\, x(t)}$.	CO3	7 Marks
	b)	State and prove the properties of Laplace Transform. i) Frequency shifting property. ii) Time reversal property. iii) Time scaling property. iv) Differentiation in Time domain property.	CO1	7 Marks

(OR)

8	a)	Determine the Laplace transform of the signal $x(t) = \begin{cases} \sin(\pi t); & 0 < t < 1 \\ 0; & otherwise \end{cases}$.	CO4	7 Marks
	b)	Find the inverse Laplace transform of the $X(s) = \frac{2s+1}{(s+1)(s^2+2s+2)}$.	CO4	7 Marks

UNIT-V

9	a)	A 1000 Hz tone is added to the signal. Find the Nyquist rate for this new signal. Is there any change in Nyquist rate?	CO5	7 Marks
	b)	Analyze the Aliasing phenomenon in sampling theorem with neat diagram and explain how to overcome it.	CO2	7 Marks

(OR)

10	a)	Find the z- transform of $x[n] = (2)^n\, u[n] + (1/3)^{-n}\, u[-n]$.	CO4	7 Marks
	b)	Find the inverse z-transform of $X[z] = \frac{z^{-1}}{1-3z^{-1}}$, if $x(n)$ is; (i) Causal sequence (ii) Anti causal sequence.	CO3	7 Marks

CODE No.:16BT30403 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

SWITCHING THEORY AND LOGIC DESIGN

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State and prove basic theorems and properties of Boolean algebra.	CO1	7 Marks
	b)	For the Boolean function $F = xy'z + x'y'z + w'xy + wx'y + wxy$ i) Obtain the truth table of F. ii) Use Boolean algebra to simplify the function to a minimum number of literals. iii) Draw the logic diagram using the original Boolean expression.	CO5	7 Marks

(OR)

2	a)	Express the Boolean function F= $xy + x'z$ as a product of maxterms and truth table. Draw the logic diagram using basic gates.	CO2	5 Marks
	b)	Represent the decimal number 6,248 in i) BCD. ii) Excess-3 code. iii) 2421 code. iv) 6311 code.	CO1	9 Marks

UNIT-II

3	a)	Simplify the following Boolean functions by finding the essential prime implicants using four variable maps i) $F(A, B, C, D) = \sum (0, 1, 3, 7, 8, 9, 10, 13, 15)$. ii) $F(w, x, y, z) = \sum (0, 1, 2, 4, 5, 6, 7, 10, 15)$.	CO4	6 Marks
	b)	Simplify each of the following functions and implement them with NAND gates. i) $F_1 = AC' + ACE + ACE' + A'CD' + A'D'E'$ ii) $F_2 = (B' + D')(A' + C' + D)(A + B' + C' + D)(A' + B + C' + D')$	CO2	8 Marks

(OR)

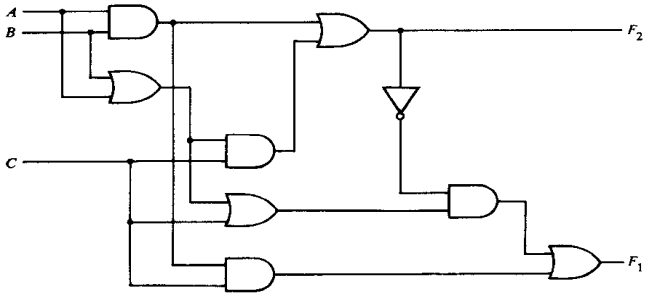
4	a)	Simplify the following Boolean function using tabulation method $F(w, x, y, z) = \sum (1, 4, 6, 7, 8, 9, 10, 11, 15)$.	CO4	7 Marks
	b)	For the function F (w, x, y, z) = $\sum$ (0, 1, 2, 3, 4, 6, 7, 8, 9, 11, 15). i) Show the K map. ii) Find all Prime Implicants and indicate which are essential. iii) Find a minimal expression for F. Is it unique?	CO4	7 Marks

UNIT-III

5	a)	Design a combinational circuit that converts a four-bit Gray code to a four bit binary number. i) Implement the circuit with Exclusive-OR gates. ii) Using a case statement, write and verify a Verilog model of the circuit.	CO3	9 Marks
	b)	Explain the operation of Carry look ahead adder.	CO2	5 Marks

(OR)

6 a) Analyze the below circuit, derive expression and truth table. CO2 8 Marks

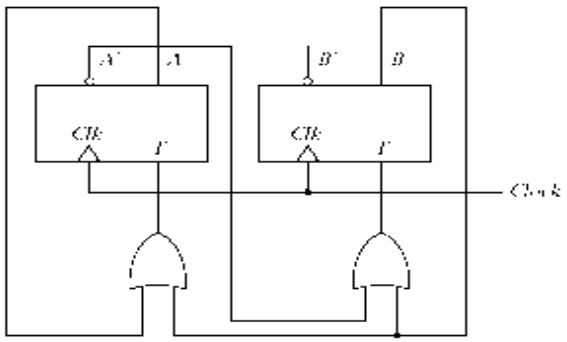


b) Draw the multilevel NAND Logic circuit for ***(AB′ + CD′) E + BC (A + B).*** CO3 6 Marks

UNIT-IV

7 a) Explain the operation of *JK* flip-flop. Construct a *JK* flip-flop using a *D* flip-flop. CO2 7 Marks

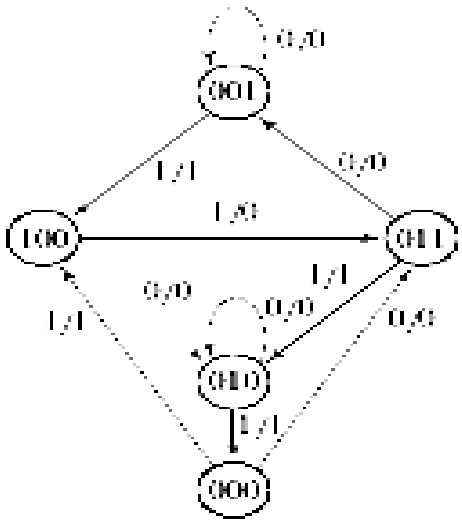
b) Derive the state table and state diagram of the sequential circuit shown below. CO5 7 Marks



(OR)

8 a) Explain the synchronous sequential circuits design procedures. CO2 5 Marks

b) Design the sequential circuit specified by the following state diagram using T flip-flops. CO6 9 Marks



UNIT-V

9 a) Implement the asynchronous sequential circuit is described by the following excitation and output functions: CO5 7 Marks

$$Y = x_1 x_2' + (x_1 + x_2')\, y$$ Using NOR SR latch.

b) Design a combinational circuit using a ROM. The circuit accepts a three-bit number and outputs a binary number equal to the square of the input number. CO6 7 Marks

(OR)

10 a) Write short notes on sequential programmable devices. CO1 7 Marks

b) Compare PLA and PAL. CO1 7 Marks

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CODE No.:16BT30441 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the expression for A_i, R_i and A_v of CE configuration with emitter resistance.	CO1	8 Marks
	b)	Differentiate types of coupling used in amplifiers.	CO3	6 Marks
		(OR)		
2		Derive the expression for current gain with resistive load.	CO1	14 Marks

UNIT-II

3	a)	Enumerate the effects of negative feedback on the various characteristics of the amplifier with suitable derivations.	CO3	9 Marks
	b)	The open loop gain of the amplifier is 50 and its bandwidth is 20kHz. When a negative feedback is applied, the bandwidth is increased to 25kHz. What will be the required feedback ratio?	CO4	5 Marks
		(OR)		
4	a)	Briefly explain classification of oscillator and explain the condition for oscillations.	CO1	8 Marks
	b)	An Hartley oscillator is designed with L_1 = 20μH, L_2 = 02mH and a variable capacitance. Determine the range of capacitance value if the frequency is varied between 950 to 2050kHz.	CO3	6 Marks

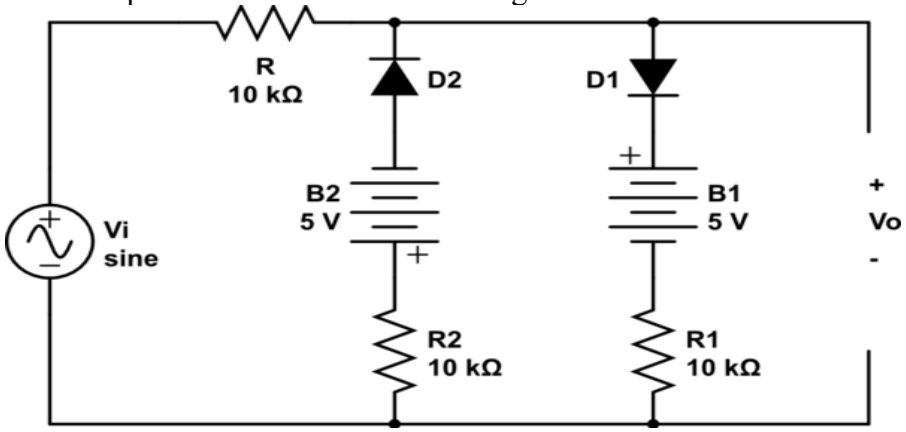
UNIT-III

5	a)	Analyze the working of direct coupled class A power amplifier and derive the equation for efficiency.	CO3	8 Marks
	b)	For transformer, the load connected to the secondary has an impedance of 8Ω. Its reflected impedance on primary is observed to be 648Ω. Calculate the turn ratio.	CO4	6 Marks
		(OR)		
6	a)	Prove that how even harmonics are eliminated in class-B power amplifier.	CO1	8 Marks
	b)	Write comparison between push pull and complementary symmetry push pull amplifier.	CO1	6 Marks

UNIT-IV

7	a)	Analyze the low pass circuit for the exponential inputs, with help of waveforms.	CO5	7 Marks
	b)	A square wave whose peak to peak amplitude is 4 V extends ±2 V with respect to ground. The duration of the positive section is 0.3 s and that of the negative section is 0.1 s. If this waveform is impressed upon an RC differentiating network whose time constant is 0.3 s, what are the steady state maximum and minimum values of the output waveform?	CO4	7 Marks
		(OR)		

8	a)	Explain the clamping circuit considering the source resistance and the diode forward resistance.	CO1	7 Marks
	b)	Plot the output wave form of the following circuit.	CO5	7 Marks



UNIT-V

9	a)	With neat circuit diagram, explain the working of the emitter – coupled binary.	CO1	7 Marks
	b)	Design an Astable multivibrator to generate a square wave of 1KHz frequency with a duty cycle of 25%.	CO4	7 Marks

(OR)

10	a)	Write different steps involved in symmetrical and unsymmetrical triggering process.	CO1	5 Marks
	b)	Design a collector coupled one-shot with a gate width of 3 ms using n-p-n transistors. Assume necessary data.	CO5	9 Marks

CODE No.: 16BT30501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

COMPUTER ORGANIZATION

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Design a combinational circuit for 4 – bit arithmetic operations which performs addition, subtraction, increment and decrement using 2x1 multiplexer.	CO3	8 Marks
	b)	Discuss applications of logic micro operations with example.	CO4	6 Marks
		(OR)		
2	a)	Show the contents of registers E, A, Q and SC during the process of division of 00001111 by 0011. Use dividend of 8 bits.	CO3	6 Marks
	b)	Draw and explain fixed point addition and subtraction flowchart.	CO1	8 Marks

UNIT-II

3	a)	Differentiate Hardwired control and Micro programmed control.	CO1	9 Marks
	b)	Write a program to evaluate the arithmetic statement **W=(P-Q/R) * (Q-S)** using three/two/one/zero address instructions.	CO5	5 Marks
		(OR)		
4	a)	Draw and explain the flowchart for interrupt cycle.	CO1	6 Marks
	b)	List and explain various memory reference instructions with control signals.	CO3	8 Marks

UNIT-III

5	a)	What is the purpose of i/o interface? Explain the various command issued to i/o interface.	CO4	5 Marks
	b)	Discuss about the various modes of data transfer with practical example	CO2	9 Marks
		(OR)		
6	a)	Discuss about the parallel priority interrupt with neat diagram.	CO2	6 Marks
	b)	With neat diagram, explain the role of DMA Transfer in Direct Memory Access.	CO4	8 Marks

UNIT-IV

7	a)	Explain the organization and accessing of data on a disk.	CO1	4 Marks
	b)	Explain various mechanisms of mapping main memory address into cache memory addresses.	CO2	10 Marks
		(OR)		
8	a)	Draw the block diagrams of two types of DRAMs and explain.	CO2	9 Marks
	b)	Write short notes on secondary storage devices.	CO6	5 Marks

UNIT-V

9	a)	Consider the multiplication of two 40*40 matrices using a vector processor i) How many product terms are there in each inner product and how many inner products must be evaluated? ii) How many multiply-add operations are needed to calculate the product matrix?	CO6	8 Marks
	b)	Discuss about the inter-processor arbitration in detail?	CO2	6 Marks
		(OR)		
10	a)	Distinguish between arithmetic pipeline and instruction pipeline.	CO2	7 Marks
	b)	Write short notes on Array processors.	CO5	7 Marks

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CODE No.: 16BT30502 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

DATA STRUCTURES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write an algorithm / function to insert a value in an orderly linear linked list.	CO1	7 Marks
	b)	Write the functions for circular linked operations such as Insert and Delete in C / C++.	CO1	7 Marks
		(OR)		
2	a)	Write a function in C for polynomial addition using singly linked lists.	CO2	10 Marks
	b)	Differentiate Arrays and Linked list.	CO1	4 Marks

UNIT-II

3	a)	Write an algorithm / function to convert given infix expression to postfix expression.	CO4	10 Marks
	b)	Trace the above algorithm / function for the following arithmetic expression **A+B*C+D**.	CO4	4 Marks
		(OR)		
4	a)	Implement stack operations PUSH, POP, Clear Stack and Empty Stack using Linear linked lists.	CO1	8 Marks
	b)	Implement circular Queue operations in 'C'.	CO1	6 Marks

UNIT-III

5	a)	Write an algorithm to delete an element from Binary Search Tree.	CO1	8 Marks
	b)	Write a function to count number of nodes in a Binary Tree.	CO1	6 Marks
		(OR)		
6		Explain different rotations to balance AVL tree.	CO1	14 Marks

UNIT-IV

7	a)	How to represent graphs in memory? Explain various methods of representations.	CO1	8 Marks
	b)	Write an algorithm to traverse the graph using Breath First Search.	CO1	6 Marks
		(OR)		
8	a)	Define minimum spanning tree. Write Kruskal's algorithm to find the minimum spanning tree.	CO1	10 Marks
	b)	List the differences between Kruskal's and Prim's algorithm.	CO1	4 Marks

UNIT-V

9		Write an algorithm for Quick sort and trace the algorithm for the following data. 9, 7, 5, 11, 12, 2, 14, 3, 10, 6.	CO2	14 Marks
		(OR)		
10		What is collision? How to resolve collision in Hashing?	CO4	14 Marks

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CODE No.: 16BT30503 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

PYTHON PROGRAMMING

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is literal? Explain the numeric and string literals in detail.	CO1	7 Marks
	b)	Illustrate the importance of variables and identifiers in Python.	CO1	7 Marks
		(OR)		
2	a)	Evaluate the following expressions as per operator precedence rules. i) **5+7*2/2*2**. ii) **3*4.5*1/2+3-4**.	CO2	9 Marks
	b)	Write about the data types in brief.	CO1	5 Marks

UNIT-II

3	a)	Explain the iterative statement "While" and illustrate with the example.	CO2	9 Marks
	b)	Explain the concept of control structure in detail.	CO2	5 Marks
		(OR)		
4	a)	Write a Python program to print the i) Calendar of the month. ii) Current date.	CO5	7 Marks
	b)	Differentiate between the Boolean Flag and Indefinite Loop.	CO2	5 Marks
	c)	Define Tuple and represent with syntax.	CO2	2 Marks

UNIT-III

5	a)	Define Function routine. Explain in detail about the Calling Value and Calling Non-Value Returning functions.	CO3	9 Marks
	b)	Distinguish between iteration and recursion.	CO3	5 Marks
		(OR)		
6	a)	Write a Python program to illustrate the "Towers of Hanoi" using recursion.	CO5	9 Marks
	b)	Explain the concept of string processing with an example.	CO3	5 Marks

UNIT-IV

7	a)	Explain the fundamental turtle attributes and behavior briefly.	CO1	9 Marks
	b)	Write a short note on default Turtle with example.	CO4	5 Marks
		(OR)		
8	a)	Define Polymorphism. Write a program in Python to execute the Run-Time Polymorphism concept.	CO4	7 Marks
	b)	Write a Palindrome Checker program in Python.	CO4	7 Marks

UNIT-V

9	a)	How the **tkinter** pragmatics and documentation in detail.	CO1	9 Marks
	b)	Distinguish between extensions and structure in GUI Programming.	CO2	5 Marks
		(OR)		
10		Write a Python program to develop a window by adding buttons and callbacks using **tkinter** and elaborate the procedure.	CO5	14 Marks

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CODE No.: 16BT31001 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

ELECTRICAL AND ELECTRONICS MEASUREMENTS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the working principle of PMMC and derive the torque equation.	CO1	7 Marks
	b)	Discuss the errors in PMMC instruments and summarize the advantages and disadvantages of PMMC instruments.	CO1	7 Marks
		(OR)		
2	a)	Explain the working principle of AC Voltmeter using Rectifiers.	CO1	7 Marks
	b)	Design an Ayrton shunt to provide an ammeter with current ranges of 1A, 5A and 10A. A basic meter with an internal resistance of 50Ω and a full scale deflection current of 1mA is to be used.	CO4	7 Marks

UNIT-II

3	a)	Identify and explain about the potentiometer which is used for measurements in laboratories.	CO5	7 Marks
	b)	Discuss in detail about ohmmeters.	CO1	7 Marks
		(OR)		
4		Describe the construction of Electro dynamo wattmeter and derive the torque equation.	CO1	14 Marks

UNIT-III

5	a)	Develop a system to measure angular displacement using capacitive sensor which changes its capacitance with respect to changes in angular displacement.	CO6	7 Marks
	b)	Analyze the performance of the Meggar circuit.	CO2	7 Marks
		(OR)		
6	a)	Select a bridge which is used for measurement of a coil whose Q value is greater than 10 and derive the necessary balance equation.	CO5	7 Marks
	b)	A bridge consists of the following : Arm ab: a choke coil having a resistance R_1 and inductor L_1 Arm bc: a non –inductive resistance R_3. Arm cd: a mica condenser C_4 in series with a non-inductive resistanceR_4. Arm da: a non- inductive resistance R_2. When this bridge is fed from a source of 500Hz, balance is obtained under following conditions: R_2 = 2410Ω; R_3 = 750Ω; C_4 = 0.35μF; R_4=64.5Ω. The series resistance of capacitor = 0.4Ω. Calculate the resistance and inductance of the choke coil. The supply is connected between **a** and **c** and the detector is between **b** and **d**.	CO4	7 Marks

UNIT-IV

7	a)	Design and analyze the digital frequency meter used for frequency measurement.	CO3	7 Marks
	b)	Analyze the importance for measurement of period with necessary sketches.	CO2	7 Marks
		(OR)		
8	a)	Design and analyze the performance of Universal Counter Timer.	CO2	7 Marks
	b)	Design a circuit used for the ratio measurement.	CO3	7 Marks

UNIT-V

9	a)	Identify an instrument which eliminates the need for fast analog to digital converter.	CO5	7 Marks
	b)	With a neat sketch, explain the frequency selective wave analyzers.	CO1	7 Marks
		(OR)		
10	a)	Write a short notes on: i) Magnetic Tape Recorders. ii) CD/DVD Recorders.	CO1	7 Marks
	b)	Analyze the spectra of different signals acquired by spectrum analyzers.	CO2	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

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		Differentiate between deflection and null type instruments with neat diagrams.	CO1	14 Marks
		(OR)		
2		Describe the standard CGS system of units and hence explain the electromagnetic, electrostatic and practical system of units.	CO6	14 Marks

UNIT-II

3	a)	Distinguish between the following with suitable examples i) Active and passive transducers. ii) Primary and secondary transducers.	CO1	7 Marks
	b)	How sensitivity of an instrument is related to the linearity? Consider a measuring system consisting of a transducer, amplifier and a recorder, with sensitivity for each equipment given below: Transducer Sensitivity 0.2mV/^{0}C Amplifier Gain 2.0V/mV Recorder Sensitivity 5.0mm/V Calculate the sensitivity of whole system.	CO3	7 Marks
		(OR)		
4		Derive the equations for time response of a first order system when subjected to unit step input. Draw the response curves and find the steady error.	CO1	14 Marks

UNIT-III

5	a)	When do the nonlinearity occurs in potentiometers and explain in detail the method to overcome it?	CO2	9 Marks
	b)	A resistance strain gauge with a gauge factor of 2 is fastened to a member which is subjected to a strain of 1×10^{-6}. If the original resistance value of the gauge is 130, calculate the change in resistance.	CO3	5 Marks
		(OR)		
6	a)	Draw and explain the frequency response of capacitive transducer.	CO2	7 Marks
	b)	Discuss the principle of working of LDR and list its applications.	CO1	7 Marks

UNIT-IV

7	a)	Explain how synchro can be used in as an error detector in a servo mechanism.	CO5	7 Marks
	b)	Discuss in detail the working principle of eddy current sensors.	CO1	7 Marks
		(OR)		
8		Identify the active transducer used for measurement of pressure. Explain its operation with a neat sketch and derive the relation between voltage and charge sensitivities.	CO4	14 Marks

UNIT-V

9	a)	Explain in detail about the absolute and incremental position encoders.	CO1	7 Marks
	b)	Distinguish between photodiode and phototransistor.	CO1	7 Marks
		(OR)		
10	a)	Explain how an ultrasonic sensor can be used for measurement of flow rate.	CO5	7 Marks
	b)	Explain the configuration of a biosensor with a neat sketch.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

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)	Identify whether the following arguments are valid or invalid: **q → t** **s → r** **q V s** **.: t V r**	CO1	7 Marks
	b)	What is the truth value of for all x P(x), where P(x) is the statement "$\mathbf{x^2 < 10}$" and the domain consists of the positive integers not exceeding 6?	CO5	7 Marks
		(OR)		
2	a)	Construct the Truth Tables for the following. i) **(pVq)^((~p)v(~r))** ii) **{(p^q)V(~p^r)} v (q^r)**	CO3	7 Marks
	b)	Prove the following are tautologies. i) **~(PVQ) V [(~P) ^ Q] V P** ii) **[(P →R) ^ (Q →R)] → [(PVQ) →R]**	CO1	7 Marks

UNIT-II

3	a)	Let R be the relation in the natural numbers N = {1,2,3,…..} defined by "**x + 2y =10**", that is, let **R = {(x,y) | x ϵN, y ϵ N, x + 2y = 10}**. Find; i) the domain and range of R. ii) $\mathbf{R^{-1}}$.	CO4	7 Marks
	b)	Define Function and explain different types of Function with examples.	CO2	7 Marks
		(OR)		
4	a)	Prove that $\mathbf{[I_{12}:/]}$ is a lattice or not?	CO1	7 Marks
	b)	Draw the Poset Diagram for the following. $[P(\{a,b,c\});\subseteq]$.	CO4	7 Marks

UNIT-III

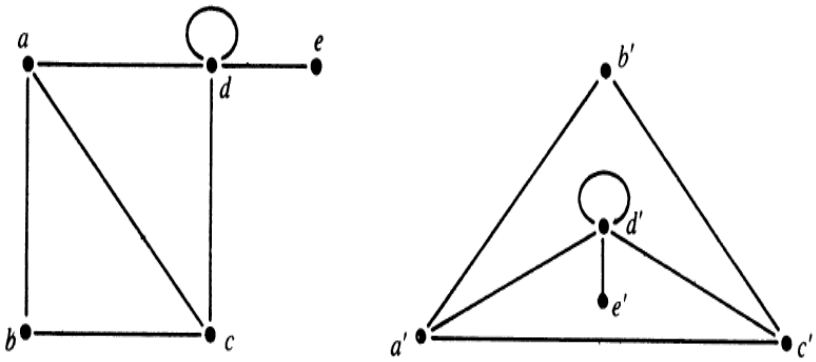
5	a)	Define Group. List all the Properties.	CO2	7 Marks
	b)	Define COSET. Explain COSET Decomposition.	CO1	7 Marks
		(OR)		
6	a)	State and prove Lagrange's Theorem.	CO1	6 Marks
	b)	Define Semi Group and Monoid. Give an example of a Semi Group which is not a Monoid.	CO5	8 Marks

UNIT-IV

7	a)	In $(1+x^5+x^9)^{10}$, find i) The Coefficient of X^{23}. ii) The Coefficient of X^{32}.	CO4	7 Marks
	b)	In how many ways can the letters {5.a, 4.b, 3.c} be arranged so that all the letters of same kind are not in a single block? Solve by using principles of inclusion and exclusion.	CO4	7 Marks
		(OR)		
8	a)	Prove that for each Positive Integer n, the n^{th} Fibonacci Number $\mathbf{F_n < (7/4)^n}$, solve by using Mathematical Induction.	CO4	7 Marks
	b)	In $\mathbf{(X_1 + X_2 + X_3 + X_4 + X_5)^{10}}$, find the coefficient of $\mathbf{X_1^2X_2^3X_4^3X_5^4}$.	CO2	7 Marks

UNIT-V

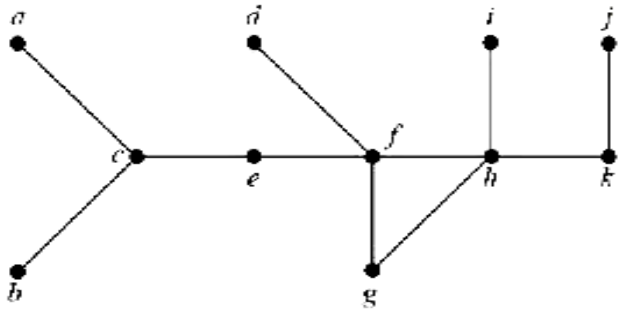
9 a) Determine whether Two Graphs are Isomorphic or not. CO2 7 Marks



b) Explain Path and Closures with an example. CO5 7 Marks

(OR)

10 a) Using DFS, find Spanning Tree for the graph. CO4 7 Marks



b) Define Minimal Spanning Tree. Explain Prime's Algorithm with an example. CO3 7 Marks

CODE No.: 16BT31501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

OPERATING SYSTEMS

[Computer Science 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 out various functions of operating systems.	CO1	7 Marks
	b)	Analyze the role of schedulers in the process selection.	CO2	7 Marks
		(OR)		
2	a)	Illustrate the Inter-process communication models.	CO4	7 Marks
	b)	How benefits are categorized in multithreaded programming.	CO2	7 Marks

UNIT-II

3	a)	What is deadlock? Show how basic semaphores solution for Dining Philosophers problem leads to deadlock.	CO3	7 Marks
	b)	Demonstrate that monitors and semaphores are equivalent insofar as they can be used to implement the same types of synchronization problems.	CO3	7 Marks
		(OR)		
4	a)	How deadlock can be avoided? Explain Banker's algorithm with an example.	CO3	7 Marks
	b)	Compare the various deadlock recovery methods.	CO3	7 Marks

UNIT-III

5	a)	What is swapping? What is the need for swapping?	CO3	7 Marks
	b)	Compare paging with segmentation with respect to the amount of memory required by the address translation structures in order to convert virtual addresses to physical address.	CO3	7 Marks
		(OR)		
6	a)	Compare Segmentation and Thrashing.	CO3	7 Marks
	b)	Describe any one page replacement algorithms.	CO3	7 Marks

UNIT-IV

7	a)	What are the on-disk and in-memory structures used to implement a file system?	CO1	7 Marks
	b)	Analyze and make meaningful statements about various disk space allocation methods.	CO1	7 Marks
		(OR)		
8	a)	Develop a technique for managing the free space.	CO1	7 Marks
	b)	How do you transfer a page memory to contiguous disk space? Explain.	CO1	7 Marks

UNIT-V

9	a)	What are the various kinds of performance overheads associated with servicing an interrupt?	CO1	7 Marks
	b)	Explain the life cycle of I/O request.	CO1	7 Marks
		(OR)		
10	a)	Discuss the strengths and weaknesses of implementing an access matrix using capabilities that are associated with domains.	CO5	7 Marks
	b)	What hardware features are needed in a computer system for efficient capability manipulation? Can these be used for memory protection?	CO5	7 Marks

CODE No.: 16BT41202 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

JAVA PROGRMMING

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Constructors does not have any return type? If yes, explain it with proper example.	CO3	10 Marks
	b)	What are the uses of this keyword in constructor?	CO1	4 Marks
		(OR)		
2	a)	Write a short note on history of Java.	CO1	9 Marks
	b)	What is parameter passing in Java? Explain with example.	CO1	5 Marks

UNIT-II

3	a)	What are the different forms of inheritance? Explain.	CO1	8 Marks
	b)	Explain in brief:	CO3	
		i) CLASSPATH		3 Marks
		ii) Interfaces		3 Marks
		(OR)		
4	a)	What is the difference between inheritance and encapsulation?	CO1	7 Marks
	b)	Explain creating packages and accessing a package with examples.	CO3	7 Marks

UNIT-III

5	a)	What is difference between checked exception and unchecked exception?	CO1	6 Marks
	b)	Is it necessary that each try block must be followed by a catch block? Justify.	CO2	4 Marks
	c)	What is Thread in Java?	CO1	4 Marks
		(OR)		
6	a)	What is the difference between Thread and Process in Java?	CO1	6 Marks
	b)	Explain with an example concept of exception handling in Java.	CO3	8 Marks

UNIT-IV

7	a)	What are methods that controls an Applet's life cycle, i.e. **init**, **start**, **stop** and **destroy**?	CO3	7 Marks
	b)	Explain in detail AWT.	CO1	7 Marks
		(OR)		
8	a)	What is the difference between an Applet and an Application?	CO4	7 Marks
	b)	How will you initialize an Applet?	CO4	3 Marks
	c)	What are user interface components?	CO1	4 Marks

UNIT-V

9	a)	What are Servlets? Explain the methods used in Servlets.	CO3	8 Marks
	b)	Explain the **javax.servlet** package.	CO1	6 Marks
		(OR)		
10	a)	What is Servlet interface? Where we use it?	CO1	6 Marks
	b)	What is Servlet collaboration?	CO1	4 Marks
	c)	When the Servlet is unloaded?	CO1	4 Marks

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CODE No.: 16BT50502 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular Examinations November - 2017

LINUX PROGRAMMING

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the usage of environment variables with suitable examples.	CO1	7 Marks
	b)	Write a short notes on the following: i) Arguments. ii) User information. iii) Host information.	CO1	7 Marks
		(OR)		
2	a)	Describe in detail any seven basic commands of Linux programming with examples.	CO1	7 Marks
	b)	Illustrate the importance of GNU project and list the major examples of software from GNU project.	CO1	7 Marks

UNIT-II

3	a)	Illustrate the need for shell in Linux. Explain different types of shells.	CO2	7 Marks
	b)	Write a shell script to enter the details of student such as the Roll no., Name and Marks of three subjects. Then calculate the total and percentage and print i) FIRST CLASS if percentage ≥ 60. ii) SECOND CLASS if percentage ≥ 45 and ≤ 59. iii) THIRD CLASS if percentage < 45.	CO3	7 Marks
		(OR)		
4	a)	Summarize the functionality of different Control structures with examples.	CO1	7 Marks
	b)	Write shell script to find out biggest number from given three numbers. Numbers are supplied as command line argument. Print error if sufficient arguments are not supplied.	CO3	7 Marks

UNIT-III

5	a)	Explain Linux file system structure with the help of diagram. Justify how Linux is more secured than other operating systems.	CO2	7 Marks
	b)	Explain in detail formatted input and output commands with examples.	CO1	7 Marks
		(OR)		
6	a)	List the various permissions used for files and directories in Linux. Illustrate in detail how you can change the permissions using **chmod**, **chgrp**, **chown** commands.	CO5	7 Marks
	b)	Write a shell script which receives two filenames as arguments. It should check whether the two file's contents are same or not. If they are same then second file should be deleted.	CO4	7 Marks

UNIT-IV

7	a)	What is a process scheduler? Analyze the criteria that affect the scheduler's performance.	CO2	7 Marks
	b)	Write a program to display ascending order of given elements in parent process and descending order in child process using **exec** and **fork** functions.	CO6	7 Marks
		(OR)		

8	a)	Elaborate the concept of process creation and process termination in Linux.	CO1	7 Marks
	b)	Define process and process table. Illustrate the contents of process table with a neat sketch.	CO1	7 Marks

UNIT-V

9	a)	What is an IPC? Discuss various IPC mechanisms.	CO1	6 Marks
	b)	Write a C program to implement the concept of inter-process communication using pipes.	CO6	8 Marks

(OR)

10	a)	Illustrate the operation of **pipe** and **popen** functions with examples.	CO1	4 Marks
	b)	Demonstrate the following processes: i) Naming the socket. ii) Creating the socket queue. iii) Accepting and requesting connections. iv) Closing a socket.	CO2	10 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

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) 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) Derive the necessary and sufficient condition for f(z) to be analytic in cartesian coordinates.

b) Find analytic function whose real part is $y + e^x \cos y$.

4. a) Evaluate $\int_{(0,0)}^{(1,1)} (3x^2 + 4xy + ix^2)dz$ along $y = x^2$.

b) Evaluate $\int_c \frac{e^{2z}}{(z-1)(z-2)} dz$ where **c** is the circle $|z| = 3$.

5. a) Find the Taylor's series of $f(z) = \frac{z-1}{z+1}$ about the point z =1.

b) Find all poles of $f(z) = \frac{1}{1+z^4}$ and find residues at all it's poles.

6. a) Find the residue of $\frac{ze^z}{(z-1)^3}$ at its pole.

b) Evaluate $\int_0^{2\pi} \frac{\cos 2\theta}{5+4\cos 2\theta} d\theta$ using Residue theorem.

7. a) Show that all the zeros of $\mathbf{z^7 - 5z^3 + 12 = 0}$ lie between the circles |z|=1 and |z|=2.

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

8. a) Find the bilinear transformation, which maps the points **z = -1, i, 1** onto the points **w = 1, i, -1**.

b) Find the image of $|z| = 1$ in w-plane under the bilinear transformation $w = i\frac{(1-z)}{(1+z)}$.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

MECHANICS OF SOLIDS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the relationship between the three elastic constants.
b) Determine the strain energy stored in 2.0m long prismatic member of cross sectional area 1200mm^2 subjected to load of 20N applied (i) gradually, (ii) suddenly and (iii) falling vertically from a height of 0.2m. Take E = 200GPa.

2. A cantilever of length 6m carries two point loads of 2kN and 3kN at a distance of 1m and 6m from the fixed end respectively. In addition to this the beam also carriers a uniformly distributed load of 1kN/m over a length of 2m at a distance of 3m from the fixed end. Draw the S.F. and B.M. diagrams.

3. a) What are the assumptions in the theory of bending?
b) A steel bar 2cm in diameter is supported at its ends over a span of 30cm and carries a load at the center of span. If the maximum stress induced in the bar is 120Mpa, find the bending, strain energy stored by the bar. Take E = 0.2MN/m^2

4. A hollow short column of external diameter 450mm and internal diameter 230mm is subjected to an eccentric load of 250kN. Determine the maximum eccentricity of the load without producing tension on the section. Also draw the core of the section.

5. a) Why are hollow shafts recommended for transmitting heavy torques?
b) Two shafts of the same material and of the same lengths are subjected to the same torque. If the first shaft is of solid circular section and the second shaft is of hollow section whose internal diameter is two-third of the outer diameter, compare the weights of two shafts.

6. Show that the shearing stress on inside of the coil of a close coiled helical spring is larger than that on the outside. Calculate the factor by witch stress on the inside is higher. Calculate the total stress on the inside.

7. The maximum stress permitted in a thick cylinder of internal and external radii 20cm and 30cm respectively is 15.0Mpa. If the external pressure is 4Mpa, find the internal pressure that can be applied. Plot the curves showing the variation of hoop and radial stresses through the material. What will be the change in thickness of the cylinder? Take E = 200Gpa and $\mu = 0.3$.

8. a) Derive Lame's equations for the analysis of thick cylinders.
b) A thick cylinder having internal radius 150mm and external radius 400mm is subjected to an internal pressure of 5MPa. Sketch the variation of radial stress and hoop stress across the thickness of the cylinder.

CODE No.:10BT30105 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

FLUID MECHANICS-I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain briefly the following :
i) Surface tension. ii) Compressibility.
b) What is capillarity? Derive expression for height of capillary rise.
c) If 5.27m^3 of a certain oil weighs 44kN, calculate the specific weight, mass density and specific gravity 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) Derive the continuity equation for one dimensional flow.
b) Do the following velocity components represent physically possible flows?
$u = x^2 + z^2 + 5$, $v = y^2 + z^2$, $w = 4xyz$.

4. Show that in case of a forced vortex flow, the rise of liquid level at the ends is equal to the fall of liquid level at the axis of rotation.

5. A straight pipe 30cm diameter, 6km long is laid between two reservoirs of surface elevation 170m and 120m. To increase the capacity of the line a 20cm diameter pipeline, 3km long is laid from the original line's mid point to the lower reservoir. What percentage increase in flow rate is gained by installing the new line? Take f = 0.02 for all pipes.

6. a) What do you understand by velocity of approach? Derive an expression for the discharge over a rectangular weir with velocity of approach.
b) The head of water over a triangular notch of angle 60^0 is 50cm and coefficient of discharge is 0.62. The flow measured by it is to be within an accuracy of ±1.5%. Find the limiting values of the head.

7. a) Show that the velocity distribution in a viscous flow through a pipe resembles letter 'D'.
b) Differentiate between hydrodynamically smooth and rough boundaries.

8. Explain the following :
i) Hydraulic grade line.
ii) Total energy line.
iii) Different non-dimensional numbers.
iv) Similitude and its types.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

FOUNDATIONS OF ELECTRICAL ENGINEERING

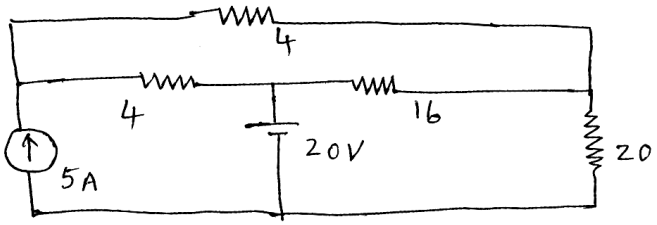
[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) 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, node, path, loop and branch in a network?
b) Obtain the currents in all the resistors of the circuit below by loop analysis. All resistances are in ohms.



3. a) Define: i) Form factor. ii) Peak factor.
b) Derive the values of form factor and peak factor for a sinusoidally varying current waveform.

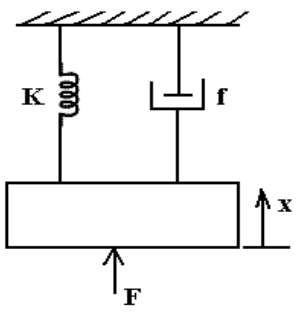
4. a) Explain the constructional features of DC Generator with neat diagrams.
b) Derive EMF equation of DC Generator.

5. a) Explain the different losses in a transformer.
b) Explain the procedure to conduct OC and SC test on a 1-phase transformer.

6. a) Explain about different types of controlling torques in instruments.
b) Explain about repulsion type moving iron ammeter.

7. a) Explain the classification of control systems.
b) Differentiate open loop and closed loop control systems.

8. a) Define transfer function.
b) For the mass-spring dashpot system shown in figure, obtain the transfer functional and also obtain the analogous electrical circuit based
i) Force-current analogy. ii) Force-voltage analogy.



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

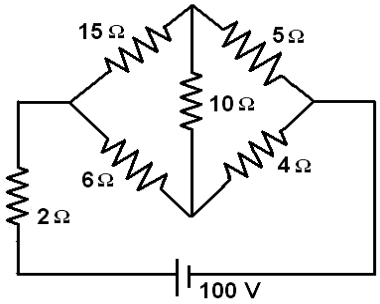
CIRCUIT THEORY

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

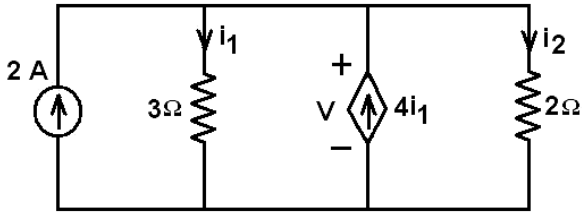
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Obtain the expressions for star-delta equivalence of resistive networks.
b) Find the current through 10Ω resistor using Kirchhoff's laws for the following circuit.



2. a) What is super node and super mesh concept? Explain with example.
b) Using Kirchoff's current law, find the values of the currents $\mathbf{i_1}$ and $\mathbf{i_2}$ in the circuit shown in figure.



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

4. a) Derive an expression for resonance frequency of a parallel RLC circuit.
b) Explain the following terms:
i) Impedance.
ii) Admittance.
iii) Active power.
iv) Power factor.

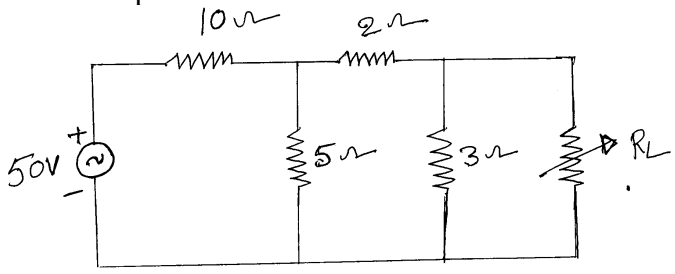
5. a) Derive the equation for the transient current **i(t)** in a series RC circuit excited by a sinusoidal voltage $\mathbf{v(t) = V_m \sin\omega t}$, at time t = 0. Assume zero initial charge across the capacitor.
b) A series RLC circuit with R = 10 ohms, L = 0.1 henries and C = 20 microfarads has a constant voltage of 100Volts applied at time t = 0. Determine the transient current **i(t)**. Assume zero initial conditions.

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 1mwb of flux and 1000 turns in the torroid.

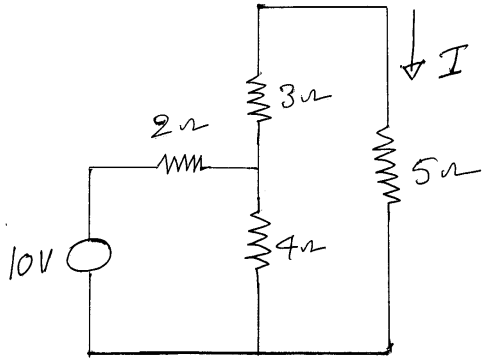
7. a) State and explain Norton's theorem.

b) Determine the maximum power delivered to the load in the circuit shown below.



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

b) Verify the reciprocity theorem for the given circuit shown below.



CODE No.:10BT30301 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

STRENGTH OF MATERIALS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Sketch and explain the stress-strain curve of brittle material.
b) A rod of steel is 20m long at a temperature of 20^0C. Find the free expansion of the length when the temperature is raised to 65^0C. Find the temperature stress produced
i) When the expansion of the rod is prevented.
ii) When the rod is permitted to expand by 5.8mm.
Take $\alpha = 12 \times 10^{-6} / {}^0$C and E = 2×10^5 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 2m carries a uniformly distributed load of 3kN/m over a length of 1.5m from its fixed end and a point load 5kN at its free end. Draw the shear force and bending moment diagrams.

3. a) Derive the bending equation from first principles.
b) State the assumptions involved in the theory of simple bending.

4. Derive the relationship between the maximum and average shear stress for:
i) Square with the diagonal horizontal.
ii) Triangular section.

5. a) Define springs in series and springs in parallel.
b) A close-coiled helical spring has a stiffness of 900N/m in compression with a maximum load of 45N and the maximum shear stress of 120Mpa. The solid length of the spring is 42mm. determine the mean coil diameter, wire diameter and the number of coils.
Take G = 40 Gpa.

6. Derive the slope and deflection of a simply supported bean with a uniformly distributed load.

7. a) Establish a relation for the change in diameter and length of a thin cylindrical shell when subjected to an internal fluid pressure.
b) Calculate the increase in volume of a boiler, 3m long and 1m diameter when subjected to an internal pressure of 200N/cm^2. The wall thickness is such that maximum tensile stress does not exceed 30MPa. Take E =2×10^4N/mm^2.

8. a) What are the assumptions made in lame's theory?
b) Discuss lame's lines construction procedure.

CODE No.:10BT30302 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

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) Name Hume-Rothery's rules and explain all of them.
b) Distinguish fully between interstitial solid solutions and interstitial compounds.

3. a) How is lever rule used in binary equilibrium phase diagram?
b) What is a binary isomorphous alloy system?

4. Explain any two surface hardening methods.

5. Explain polyphase and substitution in copper alloys.

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

7. How ceramic materials are classified? Discuss each class with their properties and applications.

8. a) Explain the blending methods of producing metal powders.
b) Write the advantages and limitations of powder metallurgy.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

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) Discuss energy band diagram for PN diode for following cases:
i) Un biased. ii) Forward biased. iii) Reverse biased.
b) Determine the forward resistance of a PN diode, when the forward current is 5mA at T = 300K. Assume the diode is silicon.

2. Derive the expressions for ripple factor, efficiency, TUF, form factor, percentage regulation and PIV of center tapped full wave rectifier.

3. a) Explain input and output characteristics of transistor qualitatively under CE configuration.
b) A transistor has $\beta = 150$. Find collector and base currents if $I_E = 10mA$.

4. a) Explain thermal runaway thermal resistance.
b) Explain the bias compensation using sensistors.

5. Derive the expressions for voltage gain, current gain, input impedance and output impedance of CE amplifier using exact and approximate model.

6. a) State advantages and disadvantages of FET's over BJT's.
b) Discuss the relationship between FET parameters.

7. a) Write short notes on different types of FET biasing.
b) Explain how the JFET is used as a voltage controlled device.

8. With a neat sketch, explain the principle of operation and characteristics of Tunnel diode.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

SIGNALS AND SYSTEMS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define and sketch the basic discrete time signals .State the conditions for a given function to be periodic.
b) Determine whether the function **a cos 2t + b sin π t** is periodic or not.

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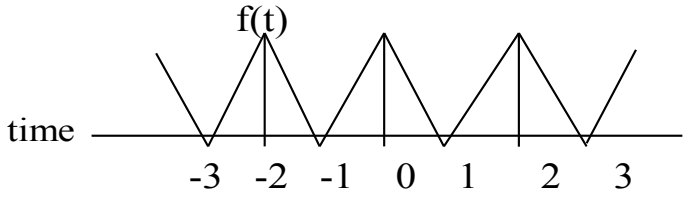
2. Find the exponential Fourier series and plot the magnitude and phase spectrum for the triangular waveform shown in figure.



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

4. a) Differentiate between convolution and correlation of signals.
b) Prove that power spectral density and auto correlation form Fourier transform pair.

5. a) The waveform **$V(t)= e^{-t/\zeta}$ u(t)** is passed through a high pass RC circuit having a time constant ζ. Find the energy spectral density at the output of the circuit.
b) Find the cross correlation of the functions **sinωt** and **cosωt**.

6. a) Determine the Nyquist sampling rate and Nyquist sampling interval for the signals.
i) **sinc(100πt)**. ii) **sinc(100πt) + sinc(50πt)**.
b) What is the effect of under sampling?

7. a) State and explain ROC property of Laplace transform if $x(t)$ is two sided.
b) Find Laplace transform of the signal $x(t) = e^{-b|t|}$.

8. a) Find the Z-transform and ROC of the discrete signal.

$x(n) =(3 \times 2^n - 4 \times 3^n)\, u(n)$

b) Find the inverse Z-transform for the following function.

$$X(z) = \frac{2z^3 - 5z^2 + z + 3}{(z-1)(z-2)}$$

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CODE No.:10BT30421 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

ELECTRONIC DEVICES AND CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain different breakdown mechanisms in PN junction diodes.
b) Write the diode current equation and explain.

2. a) With simple circuit, explain how Zener diode will act as a regulator.
b) In a bridge rectifier, the transformer is connected to 220V, 60Hz mains and the turns ratio of the step down transformer is 11**:**1.Assuming the diodes to be ideal, find
i) Voltage across the load.
ii) DC current.
iii) PIV.

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 in stable condition.

5. Derive the expressions for voltage gain, current gain, input impedance and output impedance of CE amplifier using hybrid model.

6. a) Explain the JFET construction and principle of operation and draw its V-I characteristics.
b) Write short notes on different types of FET biasing.

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

8. a) Explain about Tunnel diode with energy band diagram.
b) Explain about SCR with neat sketches.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

DISCRETE MATHEMATICAL STRUCTURES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the converse, inverse and contrapositive of the implication $p \rightarrow q$ with suitable example.
b) Obtain the principal conjunctive normal form of the formula.
$p \vee (\sim p \rightarrow (q \vee (\sim q \rightarrow r)))$

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) Define partial and total order of relations.
b) Draw Hasse diagram of **{1, 2, 3, 6, 12}** under the partial ordering relation **'divided'**.

4. a) Show that the intersection of any two congruence relations on a set is also a congruence relation.
b) Show that the composition of two congruence relations on a set is not necessarily a congruence relation.

5. Prove that when n is an integer, the following statements are equivalent.
P_1: n mod 3 =1 **P_2: n is not divisible by 3** **P_3:** $n^2 \equiv 1 (\text{mod } 3)$.

6. a) Use generating functions to determine the number of different ways 10 identical balloons can be given to four children if each child receives at least two balloons.
b) Use generating functions to solve the recurrence relation $\mathbf{a_k = 5a_{k-1} - 6a_{k-2}}$ with initial conditions $\mathbf{a_0 = 6}$ and $\mathbf{a_1 = 30}$.

7. a) Explain briefly the following with example:
i) Planar graph. ii) Hamiltonian graph. iii) Eulerian graph.
b) Prove that in any graph, the number of vertices of odd degree is even.

8. a) Define the following :
i) Minimal spanning tree. ii) Chromatic number of a complete graph K.
b) Use Kruskal's algorithm to find a minimum spanning tree for an example of the weighted graph.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

DATA STRUCTURES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) 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. What are various operations over a queue? Give algorithm for each and explain with a suitable example.

4. a) Explain about heap tree and give its implementation.
b) Give the applications of heap.

5. a) What is an AVL search tree? How do we define the height of it? Explain about the balance factor associated with a node of an AVL tree.
b) Explain how an AVL tree can be used to sort a sequence of n elements.

6. Explain about insertion and deletion operation for B-tree with appropriate example.

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

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 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

THERMODYNAMICS AND FLUID MECHANICS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Define a thermodynamic system. Explain thermodynamic first law.

2. Explain the working principle of rotary and positive displacement compressors.

3. Describe the Carnot vapour cycle and derive an expression for its efficiency.

4. a) Explain how the psychrometric chart and p-h chart are useful in air-conditioning and refrigeration systems.
b) Explain the concept of black body in radiation.

5. a) Classify different types of fluid flows.
b) Describe the working of a Bourdon tube pressure gauge.

6. How are fluid flows classified? Define steady, non-steady, uniform and non-uniform flows.

7. a) What is dimensional analysis? Explain the methods of determination of dimensionless groups.
b) Explain the term dimensional homogeneity.

8. a) Distinguish between dynamics and positive displacement pumps with neat sketches.
b) What are the types of castings used in centrifugal pumps?

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

SWITCHING THEORY AND LOGIC DESIGN

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Convert the following numbers.
i) $26153.7406)_8$ to binary.
ii) Convert $(2AC5.D)_{16}$ to binary and then to octal.
iii) $(1032.2)_4$ to decimal
b) i) Convert gray code 101011 into its binary equivalent.
ii) Use 2's complement to perform M - N with the given number M=1010100 N=1000100

2. a) Prove the following using Boolean algebra.
i) ABC +AB'C + A'BC + ABC' + AB'C +A'B'C = A+ B'C
ii) AB + ABC + A'B + AB'C = B + AC
b) Implement the following logical expression using AND-OR-INVERTER gates and also using only NAND gates. A + (B' + C) (D' +BE').

3. a) Simplify the Boolean function using the tabulation method.
F (A.B, C, D) = $\sum$m (0, 1, 2, 8, 10, 11, 14, 15)
b) Simplify the Boolean function using K-map F(W,X,Y,Z) = π(1,2,4,5,7,8,10,11,13,14)

4. a) Implement a full adder with a decoder and two OR gates
b) Design BCD to Gray code converter and realize using logic gates.

5. a) Design a combinational using a PROM . The circuits accept 3 bit binary number and generate its equitant excess-3 code.
b) Derive the PLA programming table for the combinational circuit that squares a 3 bit number.

6. a) Convert SR Flip-Flop to JK Flip-Flop.
b) Design a counter with the repeated binary sequence: 0,1,2,4,6. Use D Flip-Flops.

7. a) Design an overlapping sequence detector for detecting the sequence of 110110.
b) Explain the capabilities and limitations of finite state machines.

8. a) How do you indicate Moore outputs and Mealy outputs in an ASM block?
b) Draw the ASM chart for binary multiplier and explain with an example.

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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) Two digits are selected at random from the digits '1' through '9' .
   i) If the sum is odd, what is the probability that 2 is one of the numbers selected?
   ii) If 2 is one of the digits selected, what is the probability that the sum is odd?

b) If $f(x) = \begin{cases} \frac{1}{2}(x+1) & ,-1<x<1 \\ 0 & ,elsewhere \end{cases}$ represents the density of a random variable X,

find the mean and standard deviation of X.

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) Obtain the normal equations for fitting the regression line **Y = a + bX**.

b) Find Pearson's correlation coefficient between X and Y from the following data.

X	12	13	14	15	16	17	18
Y	28	25	22	21	22	20	10

4. a) When a sample is taken from an infinite population, what happens to the standard error of the mean if the sample size is decreased from 800 to 200.

b) Explain about Type-I and Type-II errors.

5. a) In a survey of buying habits, 400 women shoppers are chosen at random in super market 'A' located in a certain section of the city. Their average weekly food expenditure is Rs. 250 with a standard deviation of Rs. 40. For 400 women shoppers chosen at random in super market 'B' in another section of the city, the average weekly food expenditure is Rs 220 with a standard deviation. of Rs. 55. Test at 5% level of significance whether the average weekly food expenditure of the two populations of shoppers are equal.

b) In a certain district A, 450 persons were considered regular consumers of tea out of a sample of 1000 persons. In another district B, 400 were regular consumers of tea out of a sample of 800 persons. Do these facts reveal a significant difference between the two districts as far as tea drinking habit is concerned?

6. a) From a random sample of 9 bulbs of brand A the mean life is found to be 600 hours with a standard deviation of 121 hours. From a brand B with a sample of 8 bulbs the corresponding values are 640 and 144. The test whether the difference in the mean life of bulbs is significant at 5% level. ($t_{0.025} = 2.131$)

b) The results of an experiment with 3 materials A, B and C after subjected to high temperature has led to either having crumbles or being intact. The results are shown below (in suitable units).

	A	B	C
Crumbles	41	27	22
Intact	79	53	78

At 0.05 level of significance, test whether the result is the same for all the three materials. ($\chi^2 = 5.991$)

7. The following table gives the sample means and ranges for 10 samples, each of size 6, in the production of certain component. Construct the control charts for mean and range and comment on the nature of control.

1	2	3	4	5	6	7	8	9	10
37.3	49.8	51.5	59.2	54.7	34.7	51.4	61.4	70.7	75.3
9.5	12.8	10.0	9.1	7.8	5.8	14.5	2.8	3.7	8.0

8. A toll gate is operated on a freeway where cars arrive according to a Poisson Distribution with mean frequency of 1.2 cars per minute. The time of completing payment follows an exponential distribution with mean of 20 seconds. Find

i) The idle time of the counter
ii) Average number of cards in the system
iii) Average number of cars in the queue
iv) Average time that a car spends in the system
v) Average time that a car spends in the queue
vi) The probability that a car spends more than 30 seconds 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 November - 2017

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 artibitary functions $f(x)$ and $g(y)$ from $z = y f(x) + xg(y)$.

b) Solve the differential equation $2xz_x - 3yz_y = 0$ by the method of separation of variables.

2. a) Evaluate $\int_0^\infty e^{-ax} x^{m-1} \sin bx\, dx$ in terms of Gamma function.

b) Prove that $\int_0^1 xJ_n(ax)J_n(\beta x)dx = 0$ where α, β are the roots of $J_n(x) = 0, a \neq \beta$.

3. a) If $\cosh(u + iv) = x + iy$. Prove that $\frac{x^2}{\cosh^2 u} + \frac{y^2}{\sinh^2 u} = 1$ and $\frac{x^2}{\cosh^2 v} - \frac{y^2}{\sinh^2 v} = 1$.

b) Determine the analytic function $f(z) = u + iv$ if $u - v = \frac{\cos x + \sin x - e^{-y}}{2(\cos x - \cosh y)}$ and $f\left(\frac{\pi}{2}\right) = 0$.

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 Taylor's expansion for the function $f(z) = \frac{1}{(1+z)^2}$ with centre at $-i$.

b) Find Laurent series expansion of the function $\frac{z^2 - 1}{z^2 + 5z + 6}$ about z = 0 in the region $2<|z|<3$.

6. Prove that $\int_{-\infty}^{\infty} \frac{\cos x}{(x^2 + a^2)(x^2 + b^2)} dx = \frac{\pi}{a^2 - b^2}\left(\frac{e^{-b}}{b} - \frac{e^{-a}}{a}\right)$.

7. a) Show that the polynomial $z^5 + z^3 + 2z + 3$ has just one zero in the first quadrant of the complex plane.

b) If $f(z)$ is analytic and $|f(z)|$ is bounded for all z in the finite complex plane, then show that $f(z)$ is a constant.

8. a) If $w = \frac{1+iz}{1-iz}$ find the image of $|z| < 1$.

b) Find the bilinear transformation that maps the points $(0, 1, \infty)$ in z- plane onto the points (-1,-2,-i) in the w- plane.

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CODE No.:10BT3BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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 $\begin{bmatrix} 1 & 2 & 3 & 0 \\ 2 & 4 & 3 & 2 \\ 3 & 2 & 1 & 3 \\ 6 & 8 & 7 & 5 \end{bmatrix}$

b) Solve the system of equations
$x + y + z = 9$; $2x - 3y + 4z = 13$; $3x + 4y + 5Z = 40$ by using Gauss -Jordan method.

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 a real root of the equation **3x=cosx+1** by Newton Raphson method.

b) Fit a parabola $Y = a + bx + cx^2$ to the following data:

x:	-3	-2	-1	0	1	2	3
y:	1.1	1.3	1.6	2.0	2.7	3.4	4.1

4. a) Find f (42) using Newton's backward formula form the following data:

x:	20	25	30	35	40	45
$f(x)$:	354	332	291	260	231	204

b) Using Lagrange's formula find f (2) from the following data

x:	0	1	3	4
$f(x)$:	-12	0	6	12

5. a) Compute the first derivative and second derivative at x= 1.5 of the following table

x	1.5	2.2	2.5	3.0	3.5	4.0
y	3.375	7.0	13.625	24.0	38.875	59.0

b) Evaluate $\int_0^1 \frac{1}{1+x^2}\,dx$ by using Simpson's $\frac{3}{8}$ th rule taking h= $\frac{1}{6}$. Hence obtain an approximate value of π.

6. a) Using modified Euler's method find y(0.2) and y(0.4) given that $\mathbf{y^1 = y + e^x}$, y(0) =0.
b) Find y(0.1) and y(0.2) using Runge Kutta 4th order formula given that $\mathbf{y^1 = y-x}$ and y(0)=2.

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)=$\mathbf{6\, e^{-3x}}$.

8. a) It $f(x) = |\cos x|$ expand $f(x)$ as a fourier series in the interval $(-\pi, \pi)$.

b) Find the half-range cosine series for the function $f(x) = x^2$ in the range $0 \le x \le \pi$.

CODE No.:10BT30101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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) Elastic and Plastic properties
(ii) Working Stress
b) Derive the relation between various elastic moduli.

2. a) What is point of contraflexure? Locate the same for an overhanging beam of simply supported span of 6m, with one side overhanging portion of 2.5m, subjected to a UDL of 3kN/m. Draw the BMD and SFD.
b) Sketch the SFD and BMD of a cantilever beam of span 6m, subjected to concentrated load of 6kN and a clockwise couple of 10kN.m at the free end.

3. a) State the assumptions made in the simple theory of bending.
b) Determine the allowable superimposed uniformly distributed load on a 4m span simply supported beam with symmetrical I section consisting of 150mm x 20mm flanges and 20mm x 150mm 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.

4. A hollow short column of external diameter 450mm and internal diameter 230mm is subjected to an eccentric load of 250kN. Determine the maximum eccentricity of the load without producing tension on the section. Also draw the core of the section.

5. a) Derive torsion equation.
b) A hollow shaft of diameter ratio 3/8 is required to transmit 600KW at 110 r.p.m. The shear stress is not to exceed $63MN/m^2$ and the twist in a length of 3m not to exceed 1.4^0. Calculate the Maximum external diameter. $C=84GN/m^2$.

6. A close-coiled-helical spring is to have a stiffness of 900N/m in compression, with a maximum load of 45N and a maximum shearing stress of $120N/mm^2$.The solid length of the spring is 45mm.Find the wire diameter, mean coil radius and number of coils. Take $G=40,000N/mm^2$.

7. Find the change in the diameter, length and volume of a thin steel cylindrical shell of thickness 12mm, 1.5m diameter and 4.5m long carrying a fluid at a pressure of $2.8N/mm^2$.

8. a) Derive Lame's equations for the analysis of thick cylinders.
b) A thick cylinder having internal radius 150mm and external radius 400mm is subjected to an internal pressure of 5MPa. Sketch the variation of radial stress and hoop stress across the thickness of the cylinder.

CODE No.:10BT30105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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 percent for an increase of pressure from 6.867MN/m² to 15.696MN/m², what is the value of the Bulk Modulus of the liquid?

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) Show from basic principles that the continuity equation for one dimensional steady compressible flow is given by $\frac{d\rho}{\rho} + \frac{dV}{V} + \frac{dA}{A} = 0$
b) The stream function for a two dimensional plane flow is given by $\Psi = 2xy$ Determine the velocity potential function if it exists.

4. a) State and prove Bernoulli's equation.
b) Water is flowing at the rate of 40 litres/s through a tapering pipe. The diameters at the bottom and upper ends are 300mm and 200mm respectively. If the intensities of pressure at the bottom and upper ends are 250KN/m² and 100KN/m² respectively, find the difference in datum head.

5. a) List out minor head losses and mention the formula used for calculation of minor losses.
b) The difference in water surface levels in two tanks, which are connected by three pipes in series of length 300m, 170m and 210m and of diameters 300mm, 200mm and 400mm respectively is 12m. Determine the rate of flow of water if coefficient of friction are 0.005, 0.0052 and 0.0048 respectively. Consider both minor and major losses.

6. a) Derive an expression for discharge over a rectangular notch.
b) A horizontal Venturimeter with inlet and throat diameters 30cm and 15cm respectively is used to measure the flow of water. The reading of differential manometer connected to inlet and throat is 10cm of mercury. Determine the rate of flow. Take $C_d = 0.98$.

7. a) Explain Reynolds experiment. Define and explain the significance of Reynolds number.
b) For the laminar flow through a circular pipe , prove that
i) The shear stress distribution across the section of the pipe is linear.
ii) The velocity variation is parabolic.

8. a) Explain the concept of dimensional analysis and state three uses of dimensional analysis.
b) Explain the Buckingham's π-method.

CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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) Explain Newton's law of viscosity and give units for dynamic and kinematic viscosity.
b) Determine the minimum size of glass tubing that can be used to measure water level, if the capillary rise in the tube is not to exceed 0.25mm. Take surface tension of water in contact with air as 0.0735 N/m.

2. a) 250 litres/sec. of water is flowing in a pipeline having a diameter of 300 mm. If the pipe is bent by 135º, 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) Derive the Darcy-Weisbach equation for pipe flow.
b) A horizontal venturimeter with inlet diameter 200mm and throat diameter 100mm is used to measure the flow of water. The pressure at inlet is 0.18 N/mm^2 and the vacuum pressure at the throat is 280mm of mercury. Find the rate of flow. Take the value of C_d = 0.98.

4. a) A nozzle of 60mm diameter delivers a stream of water at 24 m/s perpendicular to a plate that moves away from the jet at 6 m/s. Find (i) the force on the plate (ii) the work done and (iii) the efficiency of the jet.
b) Obtain an expression for the force exerted by a jet of water on a fixed vertical plate in the direction of the jet.

5. a) What is a mass curve? Explain the procedure for preparing a mass curve and its uses.
b) The following data relate to a proposed hydro-electric station:
Available head = 28m
Catchment area = 420Sq.km
Rainfall = 140cm/year
Percentage of total rainfall utilized = 68%
Penstock efficiency = 94%
Turbine efficiency = 80%
Generator efficiency = 84%
Calculate the power developed.

6. a) What is a hydraulic turbine? Explain the classification of hydraulic turbines.
b) With the help of a neat diagram explain the construction and working of a Pelton wheel turbine.

7. a) Define the three ' Unit quantities' with reference to a hydraulic turbine. Derive expressions for these terms.
b) Explain the performance characteristic curves of hydraulic turbines.

8. a) Explain briefly the following efficiencies of a centrifugal pump:
(i) manometric efficiency
(ii) mechanical 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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CODE No.:10BT30201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

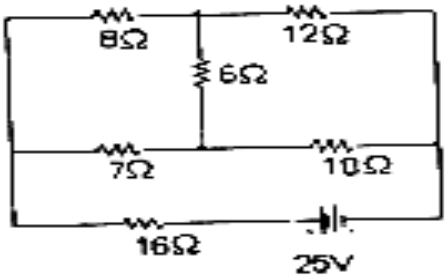
ELECTRICAL CIRCUITS

[Electrical and Electronics Engineering]

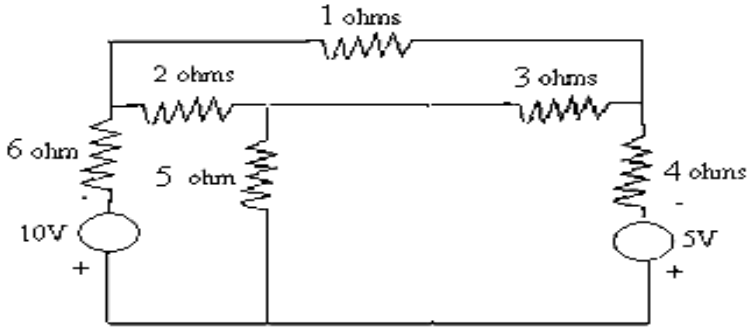
Time: 3 hours **Max. Marks: 70**

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) Define (i) Node (ii) Path (iii) Loop (iv) Branch.
b) By using loop analysis find the current flowing through 5 ohms resistor.



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) Derive the resonance frequency of series circuit interms of half power frequencies
b) A voltage of $200\angle 45^0$ volts is applied to the parallel combination of two branches. The currents in the branches are $20\angle 65^0$ A and $40\angle 30^0$ A. Find the following
i) Branch impedance and its components.
ii) Total impedance and its components.
iii) Total admittance.
iv) Power factor of the combined circuit.

5. a) Derive the relation between phase and line values of a three phase star connected balanced system.
b) Three inductive coils, each with a resistance of 15Ω and an inductance of 0.03H are connected in delta to three phase, 400V, 50Hz supply. Calculate
(i) phase current and line current (ii) total power absorbed.

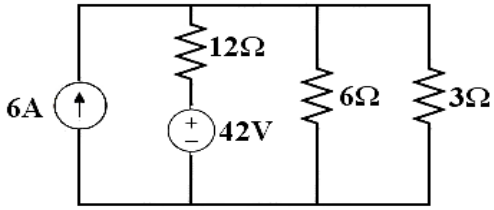
6. a) Bring out an analogy between magnetic circuits and electric circuits.

b) Define:
   i) Permeability and
   ii) Magnetic flux.

c) A ring shaped electromagnet has an air gap of 6mm and 20 cm^2 in area, the mean length of the core being 50cm and its cross section is 10 cm^2. Calculate the ampere-turns required to produce a flux density of 0.5 Wb/m^2 in the gap. Assume the permeability of iron is 1800.

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 Substitution theorem.

b) State and explain compensation theorem.

CODE No.:10BT30202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

DC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the principle of energy conversion of electromechanical system.
b) What are the significances of energy and co-energy of energy conversion system?

2. a) Derive the EMF equation of a DC generator and also explain its principle of operation.
b) An 8-pole lap wound armature of a dc machine has 960 conductors, a flux of 40mwb/pole and speed of 400 r.p.m. Calculate the **emf** generated on open circuit. If the above armature were wave connected at what speed must it be driven to generate 400V.

3. What is critical speed? How do you calculate the critical speed experimentally?

4. a) Define commutation. Explain the process of commutation in **dc** generator with neat sketches.
b) A 250V, 25KW, 4 pole **dc** generator has 328 wave connected armature conductors. When the machine is delivering full load, the brushes are given an actual lead of 7.2 electrical degrees. Calculate:
i) The demagnetizing ampere turns per pole.
ii) The cross magnetizing ampere turns per pole.

5. a) Draw and explain the load characteristics of compound generators.
b) A long shunt compound generator has a shunt field winding of 1000 turns per pole and series field winding of 4 turns/pole and resistance of 0.05 ohm. In order to obtain the rated voltage both at no-load and full load as shunt generator, it is necessary to increase field current by 0.2A. The full-load armature current of the compound generator is 80A. Calculate the diverter resistance connected in parallel with series field to obtain at compound operation.

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 10kW and takes 50A with a flux per pole of 3mWb. For these operating conditions, calculate the developed torque and the shaft torque.

7. Explain the working of a 3-point starter with neat diagram.

8. With the help of neat circuit diagram, explain Swinburne's test and derive the relations for efficiency (both for generator and motor). Also state the merits and demerits of this method.

CODE No.:10BT30222

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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. Explain the procedural steps for solving with Thevinin's theorem.

3. a) Prove that the average power in a resister is P = VI. Sketch the wave forms.
b) A Series combination of R and C in series with a resistance of 15 ohms. When a source of 120 volts at 60 Hz is applied to the complete circuit, the effective voltage across the RC combination and the pure resistor are 87.3 and 63.6 volts respectively. Find R and C ?

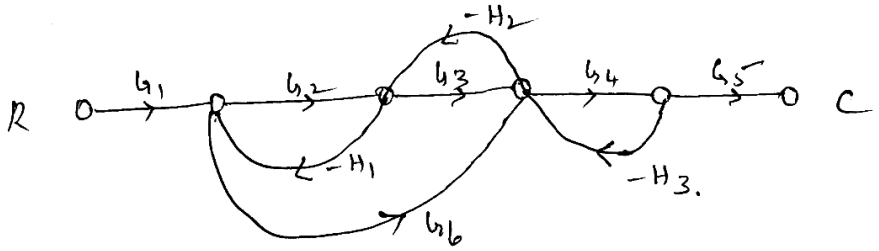
4. Write about different types of DC motors with neat diagrams.

5. a) Derive **emf** equation of transformer.
b) Define the term ' slip 'referred to 3-phase induction motor. Explain the principle of operation of 3-phase induction motor.

6. With neat sketch explain about PMMC instrument.

7. a) Write merits and demerits of open loop and closed loop control systems.
b) Write briefly as out linear and non linear control systems with examples.

8. a) Write rules of block diagram reduction technique.
b) Determine the overall gain for the SFG shown below.



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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 - 2017

CIRCUIT THEORY

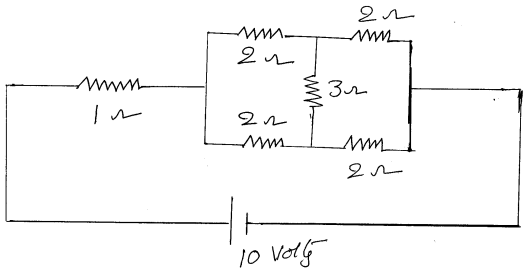
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

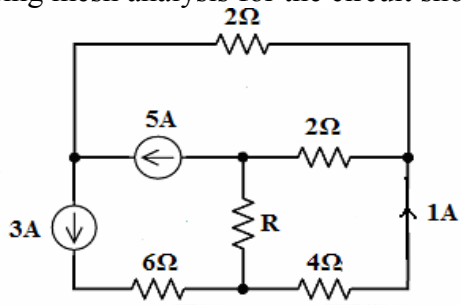
Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following
   i) Ohm's law
   ii) Source transformation technique
   iii) Current division and Voltage division rules

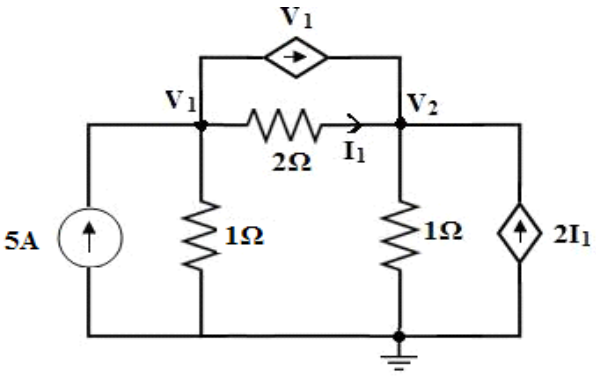
b) Find the power loss in 1Ω resistor in the figure shown below



2. a) Find the value of R using mesh analysis for the circuit shown below.

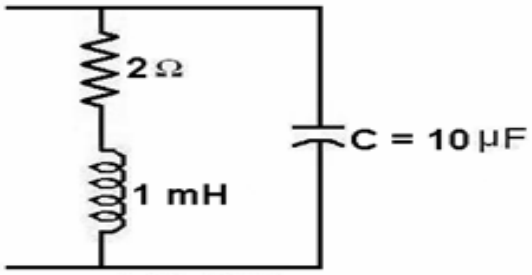


b) In the circuit shown below, find the current flowing through the 2Ω resistor using nodal analysis.

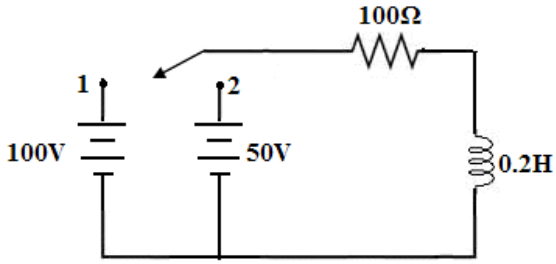


3. a) Define average value, RMS value, form factor and peak factor.
b) Obtain average value, RMS value, form factor and peak factor of a full wave rectified sine wave.

4. a) Explain Reactance, Impedance, Suceptance and Admittance.
b) In a parallel resonance circuit shown in figure find the resonance Frequency and bandwidth.

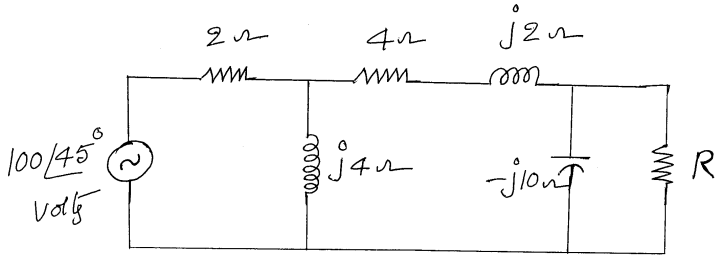


5. a) Derive the equation for the transient current i(t) in a series RLC circuit excited by a step input of V volts at time t=0. Assume zero initial conditions.
b) In the circuit shown below, the switch is closed on position 1 at t=0 there by applying the 100V source to the R-L branch, and at t=500 microseconds, the switch is moved to position 2.Obtain the equations for the current in both intervals.

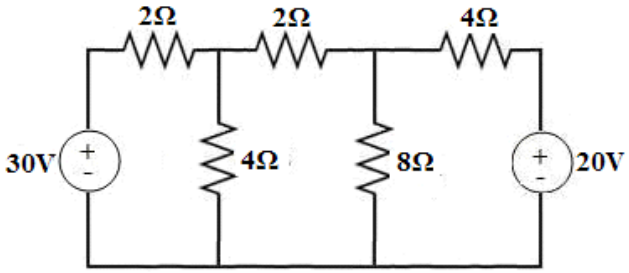


6. a) Explain concept of self and mutual inductance and write about dot rule.
b) Two coils connected in series have an equivalent inductance of 0.4H when connected in aiding and the equivalent inductance 0.2H when connected in opposition. Calculate the mutual inductance of the coils.

7. a) State and explain Thevinin's theorem.
b) Determine the value of R so that maximum power is transferred.



8. a) State and explain Reciprocity theorem.
b) Verify the Telligen's theorem for the circuit shown below.



CODE No.:10BT30301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

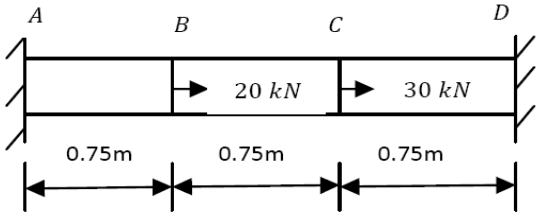
STRENGTH OF MATERIALS

[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 4900mm² and young's modulus of steel is 2.1×10^5N/mm².



2. A beam of length 6 m is simply supported at the ends and carries a uniformly distributed load of 1.5 KN/m throughout it length and three concentrated loads of 1 KN, 2 KN, 3 KN acting at a distance of 1.5m, 3m, 4.5m respectively from left end. Draw SFD and BMD for the beam and determine the maximum bending moment.

3. a) State the assumptions made in simple bending and derive the governing equation.
b) Determine the width and depth of the strongest beam which can be cut out of a cylindrical log of wood of diameter *d*.

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

5. a) State the assumptions made in deriving the torsion equation for circular shafts.
b) Define springs in series and springs in parallel

6. Derive the slope and deflection of a simply supported bean with a uniformly distributed load.

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
i) Maximum intensity of shear stress induced.
ii) Change in dimensions of the shell.
Take E= 205 GPa and poisons ratio 0.3.

8. A compound cylinder is made by shrinking a cylinder of external diameter 300mm and internal diameter of 250mm over another cylinder of external diameter 250mm and internal diameter 200mm. The radial pressure at the junction after shrinking is 8 N/mm². Find the final stresses set up across the section when the compound cylinder is subjected to an internal fluid pressure of 84.5 N/mm².

CODE No.:10BT30302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

MATERIALS SCIENCE AND METALLURGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain crystallization process in pure metals.
b) Distinguish between bond energy and bond length.

2. a) List the Hume-Rothary rules govern the formation of Substitution Solid Solution.
b) Write a note on intermediate phases.

3. a) Discuss the importance of phases and phase diagrams to a metallurgist.
b) What is a eutectic temperature? Explain.

4. a) Draw a neat microstructure and give some properties of the following.
i) Gray Cast Iron. ii) Malleable Cast Iron.
b) Give a detail classification of steel. Draw structure and give some properties of Tool and die steel.

5. Expalin the following heat treatment process.
i) Annealing. ii) Hardening.

6. a) Why titanium alloys used for human implants? Explain.
b) Give one application of titanium alloy making use of their ballistic properties.

7. a) Compare CTT and TTT diagrams.
b) Why are aluminum alloys preferred over steel parts in aircrafts?

8. Discuss the various methods of producing metal powders and write the applications 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 - 2017

THERMODYNAMICS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the causes for Irreversibility? How can you represent Irreversible process on any property diagram?
b) Define Path function and Point function? Give examples for each? What are the similarities of Work and Heat?

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) Define and prove Carnot's theorem.
b) A heat engine receives half of its heat supply at 1000K and half at 500K, while rejecting heat to a sink at 300K. Calculate the maximum efficiency of the engine.

4. a) Adiabatic mixing of two fluids is irreversible. Prove it.
b) Water is heated at a constant pressure of 0.7MPa. The boiling point is 164.97 ^{0}C. The initial temperature of water is 0 ^{0}C. The latent heat of evaporation is 2066.3kJ/kg. Find the increase of entropy of water, if the final state is steam.

5. a) Derive Clapeyron equation and state its application.
b) One kg of steam at 18 bar and 280 ^{0} C undergoes a constant pressure process until the quality of becomes 0.5 dry. Find the work done, the heat transferred and the change in entropy.

6. a) What is a polytropic process? What are the relations among p, v and T of an ideal gas in a polytropic process?
b) One kg of a air in a closed system, initially at 5 ^{0}C and occupying 0.28 m^3 volume, undergoes a constant pressure heating process to 110 ^{0}C. There is no work other than pdv work. Find:
i) The work done during the process.
ii) The heat transferred.
iii) The entropy changes of the gas.

7. a) State and prove Dalton's law of partial pressures.
b) Discuss about Gravimetric Analysis of mixtures.

8. a) Write short notes on:
i) Evaporative cooling.
ii) Chemical dehumidification.
b) How is thermodynamic wet bulb temperature different from dry bulb temperature? Which device is used for adiabatic saturation process with a neat sketch.

CODE No.:10BT30401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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 volt ampere characteristics of PN diode.
b) Explain the temperature dependence of VI characteristics.

2. a) Derive the expression for ripple factor for the circuit HWR with capacitor filter.
b) In a bridge rectifier, the transformer is connected to 220 Volts, 60 Hz mains and the turns ratio of the step down transformer is 11:1. Assuming the diodes to be ideal, find
(i) Voltage across the load (ii) D.C.Current (iii) PIV.

3. a) Explain active region, saturation region and cut-off region in transistor characteristics.
b) Explain how transistor works as an amplifier.

4. a) Derive an expression for stability factor S in self bias circuit.
b) What is thermal runaway and what is the condition for thermal stability in CE configuration?

5. a) What are the advantages of h-parameter?
b) A CE amplifier has R_c=10K Ω, R_e=2k Ω, h_{ie}=2 Ω, h_{fe}=60μmhos, $h_{re}=1\times10^{-4}$.
Calculate A_i and A_v.

6. Compare BJT, FET and JFET in all aspects and write the difference in operation of a depletion MOSFET and enhancement MOSFET.

7. a) Write short notes on different types of FET biasing.
b) Explain how the JFET is used as Voltage controlled device.

8. a) Write short notes on Schottky Barrier Diode.
b) With a neat sketch, explain the characteristics of SCR.

CODE No.:10BT30403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

SIGNALS AND SYSTEMS

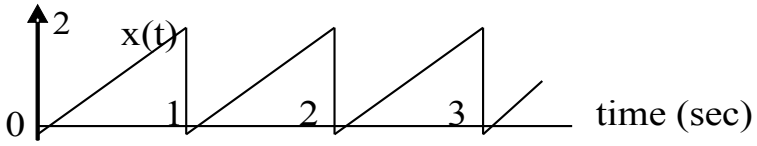
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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 sin2t + b cosπt

2. a) Find the Trigonometric Fourier series of the given waveform.



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) What is Poly-wiener criteria and what you do for distortion less transmission?
b) Derive relation between bandwidth and rise time for high pass filter.

5. a) Show that cross correlation between two functions namely $f_1(t)$ and $f_2(t)$ are related by $\mathbf{R_{12}(\lambda) = R_{21}^{*}(-\lambda)}$.
b) Determine the relation between convolution and correlation.

6. a) State and prove sampling theorem for low pass Signals.
b) Determine the Nyquist sampling rate and Nyquist sampling interval for the signals
i) sinc(200πt) ii) sinc(100πt) + sinc(50πt)

7. a) State and prove the initial valve and final value theorem of Laplace transform.
b) Determine the inverse Laplace transform of $X(S) = \dfrac{2(S+2)}{S^2+7S+12}$ Re(S)>-3.

8. a) What is meant by ROC of Z- Transform? Explain its significance.
b) Determine Z- Transform of a signal $\mathbf{x(n) = (2/3)^n u(n) + (-1/2)^n u(n)}$. 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 November - 2017

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 different breakdown mechanisms that occur in diodes.
b) Derive an expression for diode current equation.

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) Explain input and output characteristics of CE configuration.
b) Explain and derive current components of PNP BJT and what is emitter efficiency, transport factor and large signal current gain.

4. a) Explain diode compensation circuit for variations in I_C for self bias circuit.
b) How self bias circuit will eliminate drawbacks in fixed bias circuit.

5. Derive the expressions for voltage gain, current gain, input impedance, output impedance, voltage gain with respect to source and current gain with respect to source for generalized transistor amplifier at low frequencies.

6. a) With neat sketch, explain the characteristics of MOSFET in enhancement mode.
b) Draw the circuit diagram of common source amplifier and derive equation for gain of the amplifier.

7. a) With the help of circuit diagram, explain Colpitts oscillator.
b) Discuss different effects of negative feedback in amplifiers.

8. a) Explain the Emitter characteristics of UJT.
b) Explain the V-I characteristics of SCR.

CODE No.:10BT30422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

DIGITAL LOGIC DESIGN

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) How do you convert a decimal number to an equivalent number in any other base system? Explain with examples.
b) What is a signed binary number? Compare 1's and 2's complement methods of representation of negative numbers.

2. a) Prove the following Boolean theorems.
(i) **AB+A'C = (A+C)(A'+B)** (ii) **AB+A'C+BC = AB+A'C**
b) Simplify the following Boolean expressions.
(i) **ABC+AB'+ABC'** (ii) **ACD+A'BCD**.

3. a) Implement the following Boolean function F using no more than two NOR-gates and draw the circuit.
F (A,B,C,D) = ∑(0, 1, 2, 9, 11) + d (8, 10, 14, 15)
b) Simplify the following Boolean function using the four variable map.
F(A,B,C,D)=∑(0,1,2,4,5,7,11,15).

4. a) With the help of a circuit diagram, explain the operation of series full adder and compare its performance with parallel adder.
b) Explain the function of an Encoder and list its applications.

5. a) Explain the operation of R-S master slave flip flop. Explain its truth table.
b) Explain about analysis of Clocked Sequential Circuits.

6. a) Design a 3-bit synchronous counter using JK flip flops.
b) Explain the operation of a 4 bit ripple counter.

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

8. a) Explain hazards in asynchronous sequential circuits with examples.
b) Define Propagation time, Set-up time and Hold time.

CODE No.:10BT30501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

DISCRETE MATHEMATICAL STRUCTURES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Show that following equivalence $(P \rightarrow Q) \wedge (R \rightarrow Q) \Leftrightarrow (P \vee R) \rightarrow Q$.

b) Obtain principal conjunctive normal form of the formula $Q \wedge (P \vee \neg Q)$.

2. a) Are these premises $p \rightarrow r, q \rightarrow r, (p \vee q) \rightarrow r$ consistent? Justify your answer.

b) Write the following statement in the symbolic form "Every one who likes fun will enjoy each of these plays".

3. a) Give an example of a relation which is irreflexive, antisymmetric and transitive and justify.

b) Write down the power set of A, when A={a, b, c, d}. Also draw Hasse diagram of $(P(A), \subseteq)$.

4. (a) Let X be a set containing n elements, let X^* denote the free semigroup generated by X, and let $\langle S, \oplus \rangle$ be any other semigroup generated by any n generators ; then there exists a homomorphism **g:** $\mathbf{X}^* \rightarrow S$**.**

b) The order of a subgroup of a finite group divides the order of the group.

5. a) Write down any three methods of proving theorems with suitable example.

b) How many integers between 1 and 300 (inclusive) are divisible by at least one of 5, 6 and 8?

6. a) Solve **an - 5an - 1 + 6 an - 2 = 1**.

b) Solve **an + 5an - 1 + 6 an - 2 = 42 (4) n**.

7. a) Show that a tree with n vertices has exactly (n-1) edges.

b) Show that a connected multigraph has an Euler circuit if and only if each of its vertices has even degree.

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 - 2017

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 quick sort algorithm to arrange the elements in ascending order. Demonstrate the working of quick sort algorithm for the list of integers:
40, 16, 23, 54, 36, 90, 7, 88, 66, 9.

2. What is a doubly linked list? Give an algorithm to (i) insert an element, and (ii) delete an element from a doubly linked list.

3. List and explain various Queue operations with algorithms.

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) What is an AVL search tree? How do we define the height of it? Explain about the balance factor associated with a node of an AVL tree.
b) Explain how an AVL tree can be used to sort a sequence of n elements.

6. Explain about insertion and deletion operation for B-tree with appropriate example.

7. Give algorithms to do BFS and DFS of a graph. With an example, describe how these algorithms work.

8. What is hashing? Explain different hashing techniques. Explain how collision is resolved in hashing. Give appropriate example.

CODE No.:10BT31001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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) Enumerate the different thermodynamic processes and systems.
b) Explain the zeroth law of thermodynamics with examples.

2. a) Explain the classification of thermodynamic cycles.
b) Explain the classification of air compressors with neat sketches.

3. a) Distinguish between Carnot and Rankine cycles.
b) What are the different types of Calorimeters? Explain one of them with neat sketches.

4. a) Describe the working principle of vapor compression refrigeration system with a neat sketch.
b) Explain the concept of Steffan Boltzman's law in radiation heat transfer.

5. a) Classify different types of fluid flows.
b) Describe the working of a bourdon tube pressure gauge.

6. a) Derive an expression for Euler's equation of motion.
b) Explain briefly about the stream tube and its applications.

7. a) Describe the Rayleigh's method for dimensional analysis and what are the uses of dimensional analysis?
b) What is model analysis? Explain advantages of model testing.

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 - 2017

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) Explain different methods used to represent negative numbers in binary system.
b) Perform the subtraction with the following unsigned binary numbers by taking the 2's complement of the subtrahend
i) 11010 - 10010 ii) 11011 - 1101 iii) 100 - 110000
iv) 1010100 – 1010100 v) 11 – 1011

2. a) Prove the following using Boolean algebra.
i) **ABC +AB'C + A'BC + ABC' + AB'C +A'B'C = A+ B'C**
ii) **AB + ABC + A'B + AB'C = B + AC**
b) Implement the following logical expression using AND-OR-INVERTER gates and also using only NAND gates. **A + (B' + C) (D' +BE').**

3. a) Simplify the Boolean function using the tabulation method.
F (A.B, C, D) = ∑m (0, 1, 2, 8, 10, 11, 14, 15).
b) Simplify the Boolean function using K-map **F(W,X,Y,Z) = π(1,2,4,5,7,8,10,11,13,14).**

4. Design a combinational circuit that converts a decimal digit from 2,4,2,1 code to 8,4,-2,-1 code.

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 = Σm (0,1,3,5) and **F_2 = Σm (0,3,5,7)**.

6. a) Draw a 3 bit Jhonson counter and explain.
b) Design a 3 bit asynchronous UP/DOWN counter

7. Determine minimal state equivalent of State table given below

P S	NS,z	
	X=0	X=1
A	B,1	H,1
B	F,1	D,1
C	D,0	E,1
D	C,0	F,1
E	D,1	C,1
F	C,1	C,1
G	C,1	D,1
H	C,0	A,1

8. a) Explain the features of ASM chart.
b) Explain sequential binary multiplier with an example.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

MATRICES AND NUMERICAL METHODS

[Civil Engineering, Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Reduce the matrix $A = \begin{bmatrix} 1 & 2 & 1 & 0 \\ -2 & 4 & 3 & 0 \\ 1 & 0 & 2 & -8 \end{bmatrix}$ to canonical form (normal) and find its rank. 7 Marks

b) Two eigen values of the matrix $A = \begin{bmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix}$ are = 1 each. Find the eigen values and eigen vectors of the matrix A^{-1}. 7 Marks

(OR)

2 a) Find the values of 'a' and 'b' for which the equations $x + ay + z = 3$, $x + 2y + 2z = b$, $x + 5y + 3z = 9$ will have (i) unique solution (ii) infinite number of solutions (iii) no solution. 7 Marks

b) Find the eigen values and the corresponding eigen vectors of the matrix $\begin{bmatrix} 2 & 0 & 1 \\ 0 & 2 & 0 \\ 1 & 0 & 2 \end{bmatrix}$. 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 is 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) Using Newton's forward interpolation formula and the given table of values, obtain the value of f(x) when x = 1.4. 7 Marks

x	1.1	1.3	1.5	1.7	1.9
f(x)	0.21	0.69	1.25	1.89	2.61

b) Find the curve of best fit of the type $y = a\,e^{bx}$ to the following data by the method of least squares. 7 Marks

x:	1	5	7	9	12
y:	10	15	12	15	21

UNIT-III

5 a) Evaluate the first two derivatives of **y** at **x = 1.1** from the following data. 7 Marks

x	1.0	1.2	1.4	1.6	1.8	2.0
y	0	0.128	0.544	.296	2.432	4.0

b) Using Euler's method, solve for 'y' at x = 0.1 from $\frac{dy}{dx} = x + y + xy,\ y(0) = 1$ taking step size h = 0.025. 7 Marks

(OR)

6 a) Using Euler method, solve for y at **x = 2** from **dy/dx = 3 x² + 1** and **y=1** when **x = 0**. Taking step size **h = 0.25**. 7 Marks

b) From the following data, find the area bounded by the curve and the x-axis from x = 7.47 to x = 7.52. 7 Marks

x	7.47	7.48	7.49	7.50	7.51	7.52
Y = f(x)	1.93	1.95	1.98	2.01	2.03	2.06

UNIT-IV

7 a) 7 Marks

Given that $f(x) = \begin{cases} 1 + \frac{2x}{\pi} & for\ -\pi \le x < 0 \\ 1 - \frac{2x}{\pi} & for\ 0 < x \le \pi \end{cases}$

Show that $f(x) = \frac{8}{\pi^2}\left(\frac{\cos x}{1^2} + \frac{\cos 3x}{3^2} + \frac{\cos 3x}{3^2} + ...\right)$.

Deduce from this $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + ... = \frac{\pi^2}{8}$.

b) Use Fourier sine integral representation, show that $\int_0^\infty \frac{\omega \sin \omega x}{1+\omega^2} d\omega = \frac{\pi}{2} e^{-x} (x > 0)$. 7 Marks

(OR)

8 a) Obtain the half–range sine and cosine series for $\mathbf{e^x}$ in $(0, \pi)$. 7 Marks

b) Find the Fourier integral representation of $f(x) = \begin{cases} 1 - x^2 & for\ |x| \le 1 \\ 0 & for\ |x| > 1 \end{cases}$. 7 Marks

UNIT-V

9 a) Form the partial differential equation arising from **f(xy + z² , x + y + z) = 0**. 7 Marks

b) A tightly stretched string with fixed end points x = 0 and x = 10 is initially in a position given by y = b sin 3πx/10. If it is released from rest from this position, find the displacement y(x, t). 7 Marks

(OR)

10 A tightly stretched string of length ℓ has its ends fastened at x = 0 and x = ℓ. 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

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) 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) Evaluate $\int_0^2 x(8-x^3)^{\frac{1}{3}}$ dx using Beta and Gamma functions. 7 Marks

b) Show that $\left[J_{\frac{1}{2}}(x)\right] + \left[J_{-\frac{1}{2}}(x)\right]^2 = \frac{2}{\prod x}$. 7 Marks

UNIT-II

3 a) Show that an analytic function of constant modulus is constant. 7 Marks

b) Determine the analytic function $f(z) = u + iv$ given that $3u + 2v = y^2 - x^2 + 16x$. 7 Marks

(OR)

4 a) 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 a long the imaginary axis from z = 0 to z = i and then along a line parallel to real axis from **z = i** to **z = 1 + i**. 7 Marks

b) Evaluate $\oint_c \frac{3z^2 + z}{z^2 - 1}$ dz where **c** is the circle |z-1|=1 using Cauchy's integral formula. 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| < | (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) Under the transformation $w = \frac{z-i}{1-iz}$, find the image of the circle | z | = 1. 7 Marks

b) Find the bilinear transformation which transform the points **∞, i, 0** in the z-plane into **0, *i*, ∞** in the w-plane. 7 Marks

(OR)

10 a) Define cross ratio of four points and show that a bilinear transformation preserve cross ratio of points in a complex plane theorem where c is $|z|=2$. 7 Marks

b) Show that the image of the hyperbola $x^2 - y^2 = 1$ under the transformation $w = \frac{1}{z}$ is the lemniscates $\rho^2 = Cos2\phi$. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

PROBABILITY AND STATISTICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define random variable, discrete random variable, continuous random variable and conditional probabilities. 7 Marks

b) If X and Y are continues random variable then prove that $E(X+Y)=E(X)+E(Y)$. 7 Marks

(OR)

2 a) If X and Y are continuous random variable then prove that $E(XY)=E(X)E(Y)$. 7 Marks

b) A probability cure y = f (x) has a range from 0 to $\propto$. If **f (x) = e^{-x}**, find the mean, variance and the third moment. 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) 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) The following data shows the values of sample mean $\left(\bar{x}\right)$ and Range (R) for 10 samples for 6 each. Calculate the value for central live and the control limits for mean – chart and range – chart. Sketch the control charts and comment on state of control. 7 Marks

Sample No	1	2	3	4	5	6	7	8	9	10
Mean $\left(\bar{x}\right)$	43	49	37	44	45	37	51	46	43	47
Rang (R)	5	6	5	7	7	4	8	6	4	6

b) Give the geometrical inter predation of correlation co-efficient between the limits -1 and +1. 7 Marks

(OR)

6 a) Find the correction co-efficient between **x** and **y**. 7 Marks

x	21	17	15	13	12	10
y	15	14	13	11	10	9

b) If two regression co-efficient are 0.8 and 0.2 what would be the value of co-efficient of correlation. 7 Marks

UNIT-IV

7 a) Define the following: 8 Marks

i) population and samples.
ii) parameters and statistics.
iii) critical region.
iv) degrees of freedom.

b) The mean of two large samples of sizes 1000 and 2000 members are 67.5 inches and 68 inches respectively. Can the samples be rewarded as drawn from the same population of standard deviation 2.5 inches? 6 Marks

(OR)

8 a) In two large populations, there are 30% and 25% respectively of fair hired people. Is this difference likely to be hidden in samples of 1200 and 900 respectively from the two populations? 7 Marks

b) A coin was tossed 960 times and returned heads 183 times. Test the hypotheses that the coin is unbiased at 0.05 level of significance. 7 Marks

UNIT-V

9 a) The 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) Two horses A and B were tested according to the time (in seconds) to run a particular track with the following results. 7 Marks

Horse (A)	28	30	32	33	33	29	34
Horse (B)	29	30	30	24	27	29	-

Test whether the two horses have the same running capacity.
(Tabulated value 2.20 at 5% L.O.S).

b) Fit a poisson distribution to the following data and test – the goodness of fit at 5% leave of significance. 7 Marks

X	0	1	2	3	4	5	6	7
F	305	366	210	80	28	9	2	1

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

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)	Write down the impacts of modern agriculture on environment.	7 Marks
	b)	Briefly explain the types and causes of soil erosion along with soil conservation practices.	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	a)	Explain the types and values of Biodiversity.	7 Marks
	b)	What are the conservation methods of Biodiversity?	7 Marks
		(OR)	
4	a)	Briefly explain any two biochemical cycles in Ecosystem.	7 Marks
	b)	Write about Energy Flow models.	7 Marks

UNIT-III

5		Define and classify the Disasters and explain the Disaster Management with latest case studies.	14 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)	Define sustainable development and how can we achieve it.	7 Marks
	b)	Explain the Air Pollution Act.	7 Marks
		(OR)	
8		Write about Air Act, Water Act and Forest Conservation Act.	14 Marks

UNIT-V

9		Explain how population and its growth vary among different nations and the impact of growth on the environment.	14 Marks
		(OR)	
10		Explain the characteristics of population and the causes for variations among Nations.	14 Marks

CODE No.:14BT30102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

MECHANICS OF SOLIDS

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Derive an expression for the elongation of a axially loaded bar for the following conditions: 14 Marks

i) Tapering bar having diameter D_1 at one end and D_2 at the other end.

ii) Rectangular tapering bar having depth D_1 at one end and D_2 at the other end with constant width B.

(OR)

2 Derive expression for the elongation of the following bars under its own weight. Density of the material is γ. 14 Marks

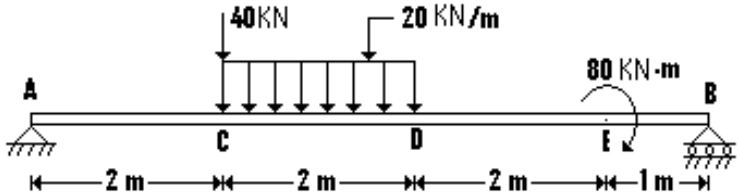
i) Prismatic bar. ii) Conical bar fixed at base.

UNIT-II

3 A Simply supported beam 6m span carries udl of 20kN/m for left half of span and two point loads of 25kN and 35kN at 4m and 5m from left support. Find maximum SF and BM and their location drawing SF and BM diagrams. 14 Marks

(OR)

4 Draw the shear force and bending moment diagrams giving the values at salient points for the simply supported beam. 14 Marks



UNIT-III

5 Three steel, plates of width 300mm and thickness 10mm are welded together to form a channel section. What is the moment of resistance of the section if the allowable bending in compression is 60MPa and in tension is 80MPa? 14 Marks

(OR)

6 A circular concrete beam of diameter 300mm is subjected to axial load of 200kN and a BM of 10kN.m. Sketch the stress distribution across the depth of the beam and mention the position of neutral axis. What is the BM that coincides the neutral axis with the bottom fiber of the beam? 14 Marks

UNIT-IV

7 Derive expressions for the following of an open coiled helical spring subjected to axial load W. 14 Marks

i) Maximum normal stress and maximum shear stress in wire.

ii) Stiffness of the spring.

(OR)

8 a) Name the various types of springs. Distinguish between bending springs and torsion springs. 7 Marks

b) In a close coiled spring, the diameter of each coil is to be 10 times that of wire of the spring and the max. Shear stress is not to exceed 60N/mm^2. Maximum permissible deflection under a load of 400N is 10cm. Taking the shear modulus as 9 x 10^{4}N/mm^2, determine the number of coils, the diameter of the coil and energy stored in the coil. 7 Marks

UNIT-V

9 A closed cylindrical vessel made of steel plates 5mm thick with plane ends, carries fluid under pressure of 6N/mm^2. The diameter of the cylinder is 35cm and length is 85cm. Calculate the longitudinal and hoop stresses in the cylinder wall and determine the change in diameter, length and volume of the cylinder. Take E = 2.1 x 10^5 N/mm^2 and 1/m = 0.286. 14 Marks

(OR)

10 Determine the maximum stress induced in a cylindrical steel strut of length 1.4m and diameter 40mm. The strut is hinged at both its ends and subjected to an axial thrust of 30kN at its ends and a transverse point load of 2kN at the centre. Take E = 2.08 x 10^{5}N/mm^2. 14 Marks

CODE No.:14BT30103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

BUILDING MATERIALS AND CONCRETE TECHNOLOGY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	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
		(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)	Discuss briefly the classification of limes. What are the applications of lime in building construction?	7 Marks
	b)	Differentiate between mild steel rods and HYSD Bars.	7 Marks
		(OR)	
4	a)	Explain the various methods of fabrication of plastics.	7 Marks
	b)	Write short notes on the following fibre reinforced plastics: i) Polyvinyl Chlorine. ii) Glass fibre reinforced polyesters.	7 Marks

UNIT-III

5		Define the term hydration of cement? Explain the various ingredients present in the cement.	14 Marks
		(OR)	
6	a)	List various types of cements. Distinguish between Ordinary Portland cement and Pozzolana Portland cement.	7 Marks
	b)	Describe the properties of fresh concrete and how is the workability of fresh concrete measured easily in the field.	7 Marks

UNIT-IV

7		Define curing of concrete. Explain the various methods of curing of concrete.	14 Marks
		(OR)	
8		Outline the various non-destructive testes conducted on hardened concrete.	14 Marks

UNIT-V

9		Define creep of concrete and explain the various factors influencing creep of concrete.	14 Marks
		(OR)	

10 Design a concrete mix to be used in structural elements by IS method for following requirements. 14 Marks

i) Characteristic compressive strength at 28 days, $\mathbf{f_{ck}}$	15N/mm^2
ii) Maximum size of aggregate	20mm
iii) Shape of coarse aggregate	Angular
iv) Degree of workability desired, compacting factor	0.85
v) Type of exposure	Moderate
Test data for concrete making materials	
Specific gravity of cement	3.15
Specific gravity of coarse aggregate	2.70
Specific gravity of fine aggregate	2.62
Water absorption (air dry to saturated surface dry)	
Coarse aggregate, percent	0.5%
Fine aggregate	1.61%
Surface moisture	
Coarse aggregate	Nil
Fine aggregate	2%

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) Supplementary Examinations June - 2018

FLUID MECHANICS-I

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Define the following fluid properties: Density, weight density, specific volume and specific gravity. 14 Marks
Two horizontal plates are placed 1.25cm apart, the space between them being filled with oil of viscosity 14poise. Calculate the shear stress in the oil if the upper plate is moved with a velocity of 2.5m/s.

(OR)

2 Explain the terms 'Total pressure' and 'Centre of pressure'. 14 Marks
A rectangular plane surface 2m wide and 3m deep lies in water in such a way that its plane makes an angle of 30° with the free surface of water. Determine the total pressure and position of centre of pressure when the upper edge is 1.5m below the free water surface.

UNIT-II

3 In a two-dimensional incompressible flow, the fluid velocity components are given by $\mathbf{u = x - 4y}$ and $\mathbf{v = -y - 4x}$. Show that velocity potential exists and determine its form. Find also the stream function. 14 Marks

(OR)

4 250litres/s of water is flowing in a pipe having a diameter of 300mm. If the pipe is bent by 135° (that is change from initial to final direction is 135°), find the magnitude and direction of the resultant force on the bend. The pressure of water flowing is 39.24N/cm². 14 Marks

UNIT-III

5 Explain the terms Hydraulic gradient line and Total energy line. 14 Marks
A horizontal venturimeter with inlet and throat diameters 30cm and 15cm respectively is used to measure the flow of water. The reading of the differential manometer connected to the inlet and the throat is 20cm of mercury. Determine the rate of flow. Take $C_d = 0.98$.

(OR)

6 Define an orifice and a mouthpiece. What is the difference between the two? 14 Marks
Water is flowing in a rectangular channel 1m wide and 0.75m deep. Find the discharge over a rectangular weir of crest length 60cm if the head of water over the crest of weir is 20cm and water from channel flows over the weir. Take C_d = 0.62. Neglect end contractions. Take velocity of approach into consideration.

UNIT-IV

7 a) Determine the pressure gradient, the shear stress at the two horizontal parallel plates and the discharge per meter width for the laminar flow of oil with a maximum velocity of 2m/sec between two horizontal parallel fixed plates which are 100mm a part. Given μ = 2.4525 N s/m². 7 Marks

b) Describe Reynold's experiment to demonstrate the two types of flow. 7 Marks

(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 What is dimensional analysis? What are the methods of dimensional analysis? Find an expression for the drag force on smooth sphere of diameter **D**, moving with an uniform velocity **V** in a fluid of density **ρ** and dynamic viscosity **μ**. 14 Marks

(OR)

10 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

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

ELECTROMAGNETIC FIELDS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State and prove Gauss's law in Point form.	7 Marks
	b)	State and prove Divergence theorem.	7 Marks
		(OR)	
2	a)	Derive the expression for EFI due to Surface charge distribution.	7 Marks
	b)	Write and explain Maxwell's first equation in integral form.	7 Marks

UNIT-II

3	a)	Derive the expression for EFI due to an Electric dipole.	7 Marks
	b)	Two point charges of 2 μC and -2 μC are located at (0,0,1) and (0,0,-1) respectively, in free space. Find the potential at (0, 3, 4) m.	7 Marks
		(OR)	
4	a)	Explain about the classification of dielectric materials. How dipolar are formed in a dielectric material?	7 Marks
	b)	Determine the capacitance of two concentric spherical conductors. Assume suitable data.	7 Marks

UNIT-III

5	a)	State and explain Biot-Savart's law.	7 Marks
	b)	Derive Lorentz law of force.	7 Marks
		(OR)	
6	a)	State Amperes law and explain the law when applied to infinitely long coaxial transmission line.	7 Marks
	b)	Obtain the expression for magnetic flux density due to a circular loop.	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)	Derive the expression for the Self inductance of a co-axial cable.	7 Marks
	b)	A two conductor transmission line is made up to of conductors, which are separated by a distance of 3m. The radius of each conductor is 1.5m. The medium is air. Compute the exact value of each conductor per KM length.	7 Marks

UNIT-V

9	a)	Explain the difference between induced, transformer and motional emf.	7 Marks
	b)	Write the point form of Maxwell's equations. Explain their significance.	7 Marks
		(OR)	
10	a)	Explain the concept of reflection and refraction in magnetic materials.	7 Marks
	b)	State and explain about Faraday's law.	7 Marks

CODE No.:14BT30202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

DC MACHINES

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the term co-energy. Derive an expression for co-energy for linear magnetic circuit	7 Marks
	b)	The magnetic flux density on the surface of an iron face is 1.6T which is a typical saturation level value for ferromagnetic material. Find the force density on the iron face.	7 Marks

(OR)

2		Discuss briefly about torque production in rotating machines and derive an expression for torque produced in rotation machine in terms of current and magnetic flux.	14 Marks

UNIT-II

3	a)	What is the necessity of equaliser rings in armature winding of DC machine? Explain.	7 Marks
	b)	Work out for winding table of a 24-slot, 4-pole simplex lap winding for a DC machine.	7 Marks

(OR)

4		Briefly discuss about the armature reaction and its effects on the operation of DC machines. How the armature reaction is minimized?	14 Marks

UNIT-III

5	a)	Explain the working of equalizer bar in parallel operation of DC series generator.	7 Marks
	b)	What are the factors which will affect the voltage build up in self excited DC generators?	7 Marks

(OR)

6	a)	Why the parallel operation of series generators is unstable? What remedial measures are taken for its successful operation?	7 Marks
	b)	A shunt generator has an induced voltage of 254V. When the machine is loaded, the terminal voltage drops down to 240V. Neglecting armature reaction, determine the load current, if the armature resistance is 0.04Ω, and the field circuit resistance is 24Ω.	7 Marks

UNIT-IV

7	a)	Explain the armature voltage control method of speed control in dc motors with circuit diagram.	7 Marks
	b)	A 220V shunt motor has an armature resistance of 0.5Ω and takes a current of 40A 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) Discuss various speed control methods of dc series motor. 7 Marks

b) A 230V DC shunt motor drives a load at 900 r.p.m drawing a current of 30A. The resistance of armature is 0.4Ω . 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 500V shunt motor takes 8A on no-load. The armature and field resistances are 0.2Ω and 250Ω respectively. Find the efficiency of DC machine: 7 Marks

i) As motor taking 90A at 500V.

ii) As generator delivering 90A at 500V.

(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 DC separately excited machine. The induced voltage falls from 220V to 190V in 30 seconds on opening armature circuit and 5 seconds and suddenly connecting armature to load resistance taking 12A (average). Find the efficiency of DC 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) Supplementary Examinations June - 2018

ELECTRIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Obtain the expressions for converting delta connected resistive network into star connected resistive network. 7 Marks

b) A Wheatstone bridge ABCD is arranged as follows, AB = 10Ω, BC = 30Ω, CD = 15Ω and DA = 20Ω. A 2V battery of internal resistance 2Ω is connected between A and C with A positive. A galvanometer of resistance 40Ω is connected between B and D. Find the magnitude and direction of galvanometer current. 7 Marks

(OR)

2 a) Determine the current I in the circuit shown in Fig.1 by using loop analysis. 7 Marks

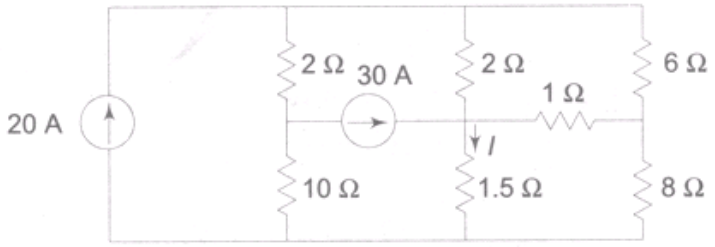

Fig.1

b) Develop dual network for the network shown in Fig.2. 7 Marks

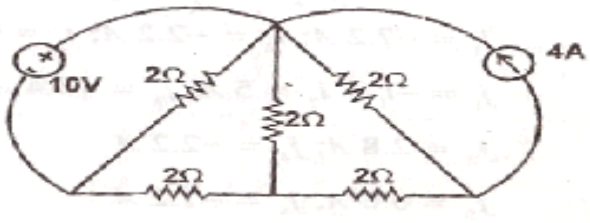

Fig.2

UNIT-II

3 a) Calculate form factor for the waveform shown in Fig.3. 7 Marks

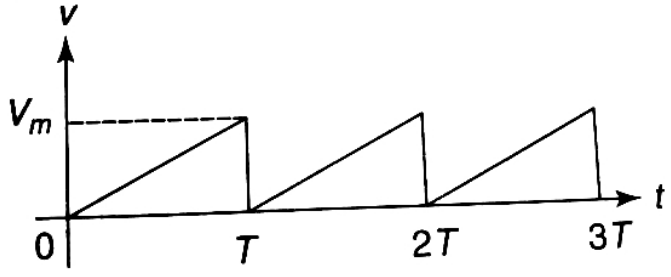

Fig.3

b) Analyze the behavior of a series RLC circuit excited by a sinusoidal voltage source. 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.4 resonates at supply frequency. 7 Marks

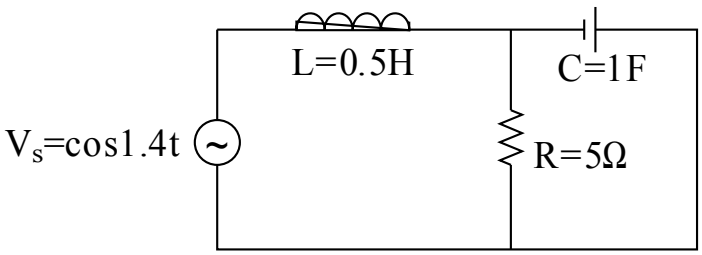

Fig.4

UNIT-III

5 A symmetrical 3-phase, 3-wire, 440V supply is connected to a star connected load. The impedances in each branch are: $Z_1 = (2+j3)\Omega$, $Z_2 = (1-j2)\Omega$, $Z_3 = (3+j4)\Omega$. Find its equivalent delta connected load, phase and line currents and the total power consumed in the circuits. 14 Marks

(OR)

6 a) Three impedances $Z_1Z_1 = (4+j7)\Omega$, $Z_2Z_2 = (7-j19)\Omega$ and $Z_3Z_3 = (10-j3)\Omega$ are delta connected to a 400V, 3-phase system. Determine phase currents, line currents and total power consumed by the load. 7 Marks

b) A symmetrical three phase 400V, three wire supply feeds an unbalanced star connected load with impedances of the load $Z_RZ_R = (5+j4)\Omega$, $Z_YZ_Y = (12+j16)\Omega$ and $Z_BZ_B = (6-j10)\Omega$. Find its equivalent delta connected load. Derive the necessary equations. 7 Marks

UNIT-IV

7 a) Explain the importance of dot convention in coupled circuits. 6 Marks

b) In Fig.5, find the voltage drop across capacitor and resistor. 8 Marks

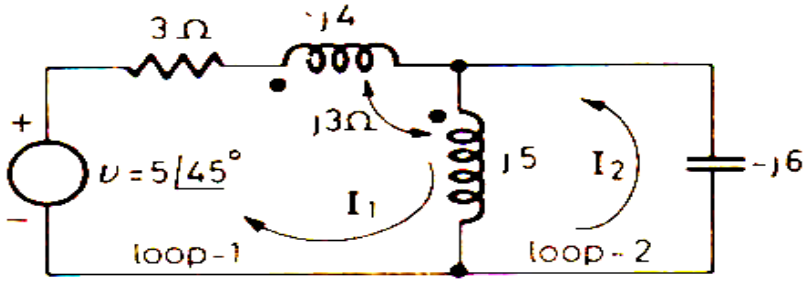

Fig.5

(OR)

8 a) Derive the relation among self-inductance, mutual inductance and coefficient of coupling. 7 Marks

b) Obtain the equation for the total inductance when two coils are connected in 7 Marks
i) Series aiding and opposing.
ii) Parallel aiding and opposing.

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.6. 7 Marks

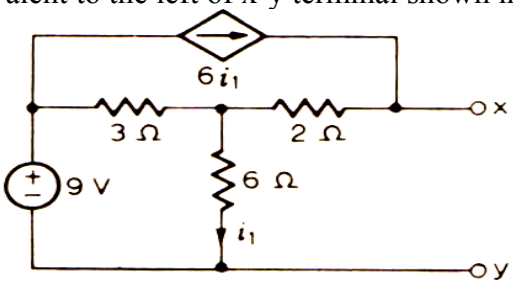

Fig.6

(OR)

10 a) State and Explain Milliman's theorem with a suitable Example. 7 Marks

b) Find the current 'I' in the circuit shown in Fig.7 using superposition theorem. 7 Marks

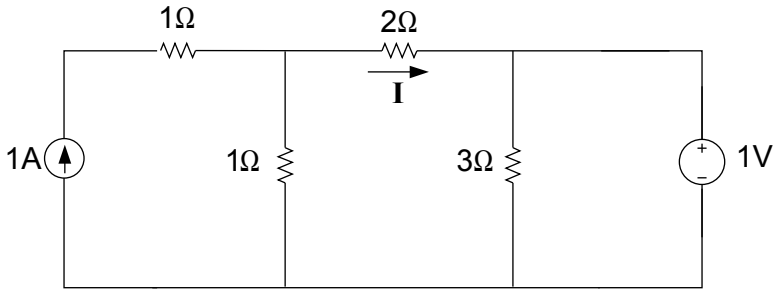

Fig.7

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

ELECTRICAL TECHNOLOGY

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	With the help of neat diagram, explain various types of DC generators.	8 Marks
	b)	Explain the procedure for conducting swineburne's test on a DC motor.	6 Marks
		(OR)	
2	a)	List out the characteristics of DC motor and briefly explain them.	8 Marks
	b)	An 8-pole lap wound generator armature has 960 conductors, a flux of 40m Wb and a speed of 400 r.p.m. Calculate the e.m.f. generated on open circuit. If the same armature is wave wound, at what speed must it be driven to generate 400V.	6 Marks

UNIT-II

3	a)	Derive the e.m.f. equation of a single phase transformer.	7 Marks
	b)	Explain the working principle of a single phase transformer.	7 Marks
		(OR)	
4		Predetermine the efficiency of single phase transformer from OC and SC tests with neat diagrams with respect to phasor diagrams.	14 Marks

UNIT-III

5	a)	What is poly phase system and list out the advantages of poly phase systems?	7 Marks
	b)	A balanced three phase load draws 8kW at a lagging p.f of 0.8. If the line voltage applied is 440V, find the complex power and line current.	7 Marks
		(OR)	
6		A symmetrical 3-phase, 3-wire, 440V supply is connected to a star connected load. The impedances in each branch are: $\mathbf{Z_1=(3+j4)\Omega, Z_2=(1-j2)\ \Omega, Z_3=(2+j3)\Omega.}$ Find its equivalent delta connected load, phase and line currents and the total power consumed in the circuits and draw respective phasor diagrams.	14 Marks

UNIT-IV

7	a)	Derive the torque equation of 3-φ induction motor.	7 Marks
	b)	Explain about constructional details of squirrel cage and slip ring induction rotors.	7 Marks
		(OR)	
8	a)	Explain the classification of three phase alternators.	7 Marks
	b)	Derive the e.m.f. equation of an 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 about the production of double field revolving theory with appropriate figures.	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 June - 2018

NETWORK ANALYSIS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

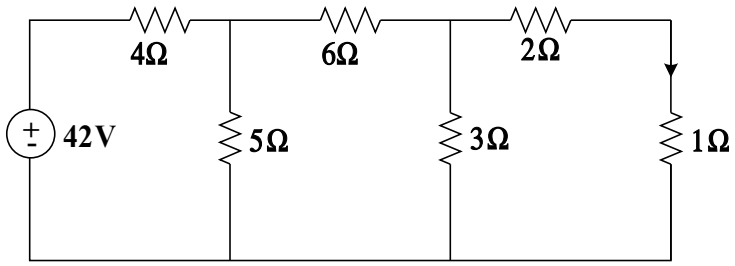
1 a) Explain about series and parallel inductive and capacitive circuit. 8 Marks

b) The filament of a light in the circuit has a certain amount of resistance. The bulb operates with 120V and 0.8A of current, what is the resistance of its filament? 6 Marks

(OR)

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

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



UNIT-II

3 a) Define the following terms with respect to fundamental sinusoidal AC quantity. 8 Marks

i) Average value. ii) RMS value.
iii) Form factor. v) Peak factor.

b) The Q factor of a RLC circuit is 5 at its resonance frequency of 1kHz. Assuming the power dissipation of 250W when the current drawn is 1A, find the circuit parameters and band width of the circuit. 6 Marks

(OR)

4 a) Define resonance and list out its implications. 6 Marks

b) What is locus diagram? Draw and explain current locus diagram for a series RL circuit with fixed resistance by deriving necessary expressions. 8 Marks

UNIT-III

5 a) Obtain the transient response of RC series circuit for sinusoidal excitation. 7 Marks

b) A series RC circuit has R = 20Ω and C = 100μF. A voltage v = 200 Sin 314t is applied at t = 2.14m second. Obtain an expression for current. Find the value of current after time 1m second from the switching instant. 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 Y-parameters in terms of Z-parameters. 7 Marks

b) Explain about cascade connection of two port networks. 7 Marks

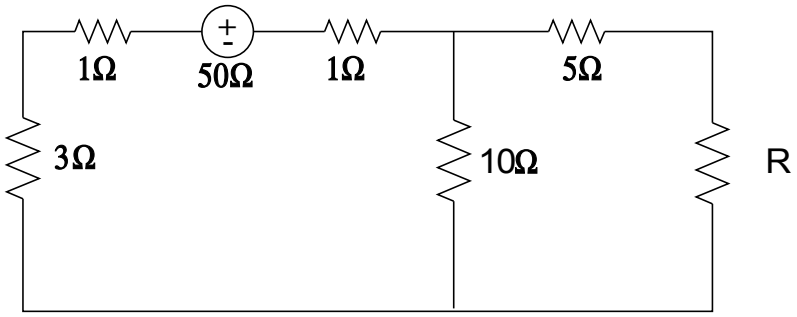
(OR)

8 Define image impedance. Derive the expressions of image impedances of the basic T-Network. 14 Marks

UNIT-V

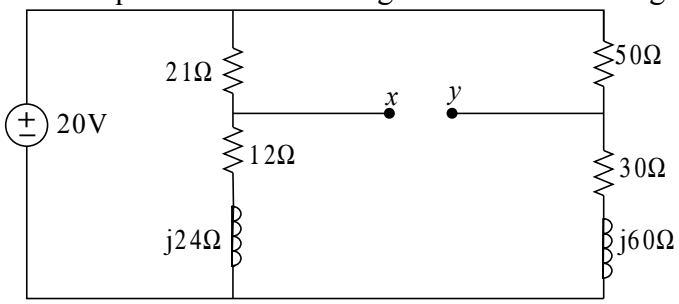
9 a) State and explain maximum power transfer theorem with a suitable example. 7 Marks

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



(OR)

10 a) Obtain the Thevenin equivalent for the bridge circuit shown in figure. 14 Marks



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

BASICS OF ELECTRICAL AND MECHANICAL TECHNOLOGY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

PART-A

UNIT-I

1	a)	State and explain Kirchhoff's laws.	7 Marks
	b)	Explain the IE rules for internal wiring estimation.	7 Marks
		(OR)	
2	a)	Define the following terms: i) Power factor. ii) RMS 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 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		Define welding. With a neat sketch, explain TIG process of welding.	14 Marks
		(OR)	
6		With a neat sketch, explain the working of four stroke diesel engine.	14 Marks

UNIT-IV

7		With a neat sketch, explain the working of Vapour compression refrigeration system.	14 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 multi stage reciprocating air compressor.	7 Marks
	b)	Explain the need of various earth moving equipments with neat sketches.	7 Marks
		(OR)	
10	a)	Explain the working principle of single stage compressor with neat sketch.	7 Marks
	b)	Write short notes on the following: i) Concrete mixer. ii) Bull dozers.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

[Mechanical Engineering]

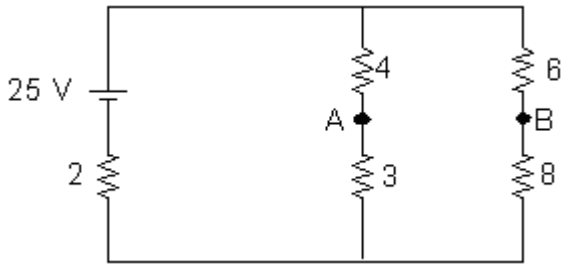
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) What are the factors upon which resistance depends? 7 Marks

b) Determine the current in the battery, the current in each branch and the potential difference across AB in the network shown in below figure (All resistances are in ohms). 7 Marks

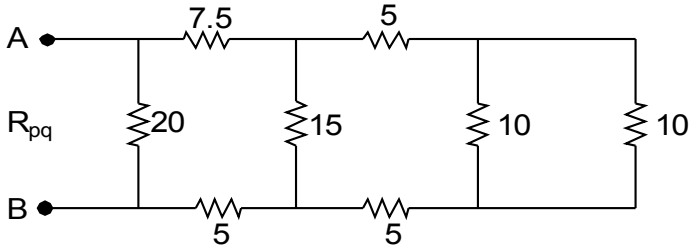


(OR)

2 a) Explain the following terms: 7 Marks

i) Charge.
ii) Electric Potential.
iii) Potential difference.
iv) Electric current.

b) Calculate the equivalent resistance between the nodes A and B of circuit shown in figure (All resistances are in ohms). 7 Marks



UNIT-II

3 A coil of resistance 15Ω, inductive reactance of 30Ω is connected in series with a capacitive reactance of 45Ω across a 200V, 50Hz supply. Calculate 14 Marks

i) Inductance and capacitance of the circuit.
ii) Total impedance of the circuit.
iii) Current.
iv) Power factor and power consumed.
v) Draw the phasor diagram.

(OR)

4 a) Define: 8 Marks

i) Active power. ii) Reactive power. iii) Form factor. iv) Power factor.

b) Determine the sinusoidal response of parallel RL circuit. 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		Explain the construction features of a DC machine with the help of neat sketches.	14 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		Discuss the rectifier type voltmeter and ammeter. List out its merits and demerits	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		What is rectifier? Explain construction and operation of half wave rectifier with help of wave forms and also derive its ripple factor and regulation.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

BASIC ELECTRICAL ENGINEERING

[Computer Science and Engineering, Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 What are the basic circuit components? With circuit symbols and equations explain each of them in detail. 14 Marks

(OR)

2 a) Derive the expression for Equivalent inductance 'L_{eq} ' when three inductances L_1, L_2, L_3 are connected in parallel. 8 Marks

b) What is the symbolic representation of ideal independent DC voltage source? Also draw its V-I characteristics. 6 Marks

UNIT-II

3 a) An alternating current is expressed as **i = 12.18 sin 314 t**. Determine 8 Marks
i) RMS current. ii) Frequency.
iii) Instantaneous current when t = 0.02 sec.

b) Give the comparison between single phase and three phase systems in detail. 6 Marks

(OR)

4 A series RC circuit with R = 4.0 x $10^3\Omega$ and C = 0.40μF is connected to an AC voltage source $v(t) = 100\sin\omega t$ V, with ω = 200 rad/s. 14 Marks
i) What is the RMS current in the circuit?
ii) What is the phase between the voltage and the current?
iii) Find the power dissipated in the circuit.
iv) Find the voltage drop both across the resistor and the capacitor.

UNIT-III

5 Give the classification of DC generators. With neat circuit diagrams, explain each of them in detail. 14 Marks

(OR)

6 a) Explain the constructional details of a DC machine with neat sketch. 7 Marks

b) A DC generator is found to develop an armature voltage of 200V. If the flux is reduced by 25% and speed is increased by 40%, calculate the armature generated voltage. 7 Marks

UNIT-IV

7 A 100KVA 1-phase transformer has full load primary current of 400A and total resistance referred to primary is 0.006. If the iron loss amounts to 500W, find the efficiency at full load and half load at 14 Marks
i) Unity power factor.
ii) 0.8 power factor.

(OR)

8 What are different types of Induction motors? With a neat diagram, explain the constructional details of a three phase induction motor. 14 Marks

UNIT-V

9	a)	What are the advantages and disadvantages of PMMC instruments?	7 Marks
	b)	What are digital multimeters? Discuss its use.	7 Marks
		(OR)	
10	a)	Explain about the construction and operation of repulsion type moving iron instruments.	8 Marks
	b)	Write short notes on digital multi meters.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

FOUNDATIONS OF ELECTRICAL ENGINEERING

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about various types of sources used in electrical circuit analysis.	7 Marks
	b)	Explain when the mesh analysis and super mesh analysis are used.	7 Marks
		(OR)	
2		State and prove Kirchhoff's laws.	14 Marks

UNIT-II

3	a)	Explain with neat diagram, generation of an alternating voltage.	8 Marks
	b)	Explain the concept of phase and phase difference of an alternating quantity with illustration.	6 Marks
		(OR)	
4	a)	Find the average value and RMS value of the resultant current in a wire which carries a direct current of 5A and sinusoidal alternating current with a peak of 5A.	8 Marks
	b)	Show that in an AC circuit, current through purely resistive circuit is in phase with applied voltage.	6 Marks

UNIT-III

5	a)	Explain different types of DC generators.	8 Marks
	b)	A 110V DC shunt generator delivers a load of 50A .The armature resistance of 0.19Ω and the field resistance is 50Ω. The generator is driven at 1800 r.p.m. It has poles with 360 conductors connected in lap fashion. Determine flux per pole	6 Marks
		(OR)	
6	a)	Explain different types of DC Motor.	8 Marks
	b)	From the first principles calculate the torque developed by a 4 pole DC motor having 1150 lap connected conductors the armature current is 19A and the flux per pole is 25mWb.	6 Marks

UNIT-IV

7	a)	Derive the expression for induced e.m.f of single phase transformer.	8 Marks
	b)	Discuss about the various losses encounter in single phase transformer.	6 Marks
		(OR)	
8	a)	Explain the principle of operation of three phase Induction Motor.	8 Marks
	b)	Discuss about the principle operation of AC Servo Motor.	6 Marks

UNIT-V

9	a)	Discuss various types of closed loop systems with illustrations.	8 Marks
	b)	Explain about linear and non linear systems with illustrations.	6 Marks
		(OR)	
10	a)	Explain the classification of control systems.	7 Marks
	b)	What is the effect of feedback on the output of the given control system?	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

STRENGTH OF MATERIALS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Differentiate between: 6 Marks
i) Stress and strain.
ii) Normal stress and shear strain.
iii) Yield stress and working stress.

b) An aluminum bar 60mm diameter when subjected to an axial tensile load 100kN elongates 0.20mm in a gauge length 300mm and the diameter is decreased by 0.012mm. Calculate the modulus of elasticity and the Poisson's ratio of the material. 8 Marks

(OR)

2 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 25mm in diameter is encased in steel tube 30mm internal diameter and 35mm external diameter. The ends are rigidly attached. The composite bar is 600mm 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/mm² and E for Copper as 1×10^5 N/mm². 8 Marks

UNIT-II

3 a) Derive the relation between bending moment and shear force in a beam. 4 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. 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 8kN and overhanging span BC carries 2kN/m completely draw Shear force and Bending Moment diagrams indicating salient points. 10 Marks

UNIT-III

5 A beam of square section has side 'a'. If the permissible bending stress is 'f' find the moment of resistance when the beam section is placed such that 14 Marks
i) Two sides are horizontal.
ii) One diagonal is vertical.
Find also the ratio of the moments of resistance of the section in the two positions.

(OR)

6 a) Define: Torsional stiffness and Polar Modulus. 4 Marks

b) A hallow shaft of 75mm external diameter and 50mm internal diameter twists through an angle of 0.6 degree in a length of 1200mm when subjected to an axial twisting moment of 1051Nm. Determine the deflection at the center of the shaft due to its own weight when placed in a horizontal position on supports 1200mm apart. The shaft weights 235N. Poison's ratio = 0.3. 10 Marks

UNIT-IV

7 A beam AB of length 8m is simply supported at its ends and carries two point loads of 50kN and 40kN at a distance of 2m and 5m respectively from left support A. Determine, deflection under each load, maximum deflection and the position at which maximum deflection occurs. Take $E = 2 \times 10^5 N/mm^2$ and $I = 8.5 \times 10^6 mm^4$. 14 Marks

(OR)

8 a) What are the advantages of Macaulay method over the double integration method for finding the slope and deflections of beams? 4 Marks

b) A beam is simply supported at its ends over a span of 10m and carries two concentrated loads of 100kN and 60kN at a distance of 2m and 5m respectively from the left support. Calculate: 10 Marks

i) Slope at the left support.

ii) Slope and deflection under the 100kN load.

Assume $EI = 36 \times 10^4$ kN-m^2.

UNIT-V

9 a) What assumptions are taken in the analysis of thin cylinders? Deduce expressions for the circumferential and longitudinal stresses in them. 6 Marks

b) Determine the maximum hoop stress across the section of a pipe of external diameter 600mm and internal diameter 440mm, when the pipe is subjected to an internal fluid pressure of 50N/mm^2. 8 Marks

(OR)

10 a) A steel cylinder of 1000mm inside diameter is to be designed for an internal pressure of 4.8MN/m^2. Take E = 200GN/m^2 and $\mu = \frac{1}{3}$ and calculate: 8 Marks

i) The thickness if the maximum shearing stress is not to exceed 21MN/m^2.

ii) The increase in volume, due to working pressure, if the cylinder is 7m long with closed ends.

b) A thick spherical shell of 180mm internal diameter is subjected to an internal fluid pressure of 24MN/m^2. If the permissible tensile stress is 120MN/m^2, find the thickness of the shell. 6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

MATERIALS SCIENCE AND METALLURGY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe why different crystal structures exhibit different strengths and ductilities.	7 Marks
	b)	How the grain size of metal can be measured? Explain.	7 Marks
		(OR)	
2	a)	What are the different line and surface defects in a crystal lattice structure? Explain them with neat diagrams.	7 Marks
	b)	How do you classify engineering materials? Explain them with suitable examples.	7 Marks

UNIT-II

3	a)	Explain the phase diagram of binary isomorphous alloy system.	7 Marks
	b)	Explain Hume-rothery rules.	7 Marks
		(OR)	
4	a)	Explain eutectic and peritectic reactions with the help of phase diagram.	7 Marks
	b)	What is phase diagram? Explain the importance of Gibbs phase rule.	7 Marks

UNIT-III

5	a)	Explain Austenite-Bainitic transformation of eutectoid steel with help of Time-Temperature-Transformation (TTT) curves.	7 Marks
	b)	What are the different surface heat treatment processes? Explain the cyaniding process with neat diagram.	7 Marks
		(OR)	
6	a)	Explain flame hardening process with neat diagram.	7 Marks
	b)	Why Time-Temperature-Transformation (TTT) diagrams are constructed? Explain.	7 Marks

UNIT-IV

7	a)	Mention atleast three different types of cast irons. How do they differ with respect to composition and structure?	7 Marks
	b)	Write short notes on aluminum alloys.	7 Marks
		(OR)	
8	a)	What are the different stainless steels? Explain.	7 Marks
	b)	What is titanium? Explain the properties and applications of Titanium and its alloys.	7 Marks

UNIT-V

9		What do you understand by powder metallurgy? What are the main stages of powder metallurgy process? Explain.	14 Marks
		(OR)	
10	a)	Explain about any one polymer matrix composite.	7 Marks
	b)	Explain metal matrix composites and their applications.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

THERMODYNAMICS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain thermodynamic equilibrium.	7 Marks
	b)	Distinguish between: i) Microscopic and Macroscopic approaches of thermodynamics. ii) Intensive and extensive properties.	7 Marks
		(OR)	
2	a)	If a gas of volume 6000cm^3 and at pressure of 100kPa 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)	What is a steady flow process? Write the steady flow energy equation and explain the various terms in it.	7 Marks
	b)	Represent schematically heat engine, heat pump and refrigerator. Give their performance.	7 Marks
		(OR)	
4	a)	Establish the equivalence of Kelvin - Plank and Clausius statements of second law of thermodynamics.	7 Marks
	b)	A heat engine is used to drive a heat pump. The heat transfer from the heat engine and the heat pump are used to heat the water circulating through radiator of a building. If the COP of the heat pump is 4 and the efficiency of the heat engine is 0.3, how much heat is transferred to the radiator water for every kJ heat transferred to the heat engine?	7 Marks

UNIT-III

5	a)	What is irreversibility? Show the gain of entropy in an irreversible process on T-s diagram in the case of steam turbine and compressor.	7 Marks
	b)	Define the term availability. Find an expression for the availability of a closed system.	7 Marks
		(OR)	
6	a)	2kg of water at 80°C are mixed adiabatically with 3kg of water at 30°C in a constant pressure process of 1 atmosphere. Find the increase in the entropy of the total mass of water due to the mixing process (*cp* of water = 4.187kJ/kg K).	7 Marks
	b)	Explain available, unavailable energies. When the system does become dead?	7 Marks

UNIT-IV

7	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
		(OR)	

8 a) Derive Maxwell's equations. 7 Marks

b) Calculate the enthalpy and internal energy of steam at a pressure of 12 bar 7 Marks

i) When the steam is having a dryness fraction of 0.8.

ii) When the steam is dry and saturated.

iii) When the steam is super heated to a degree of super heat of 20^0C.

UNIT-V

9 a) Derive the expression of the air standard efficiency of the dual cycle in terms of compression ratio, cut off ration and adiabatic index. 10 Marks

b) Sketch and describe the p-v and T-s diagrams of Otto cycle. 4 Marks

(OR)

10 Derive an expression for the thermal efficiency of diesel cycle and draw P-V and T-S diagrams. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

MANUFACTURING TECHNOLOGY-I

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	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
		(OR)	
2	a)	What are the desirable properties of moulding sands? Give the basic composition of a moulding sand.	7 Marks
	b)	With a neat sketch, explain various casting terms.	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)	With sketches, explain how a shell mould is made. List the advantages of making casting in shell moulds.	7 Marks
	b)	What are the main difficulties encountered in Cupola operation? Suggest suitable remedies.	7 Marks

UNIT-III

5	a)	How do you classify welding processes? List merits, demerits and applications of various welding processes.	7 Marks
	b)	Outline the design steps involved in the design of welded joints.	7 Marks
		(OR)	
6	a)	Describe electro slag welding.	7 Marks
	b)	Describe metal inert gas arc welding process with a neat sketch.	7 Marks

UNIT-IV

7		With a neat sketch, explain the SAW process. Also discuss effect of various welding parameters on the weld quality.	14 Marks
		(OR)	
8	a)	What is forge welding? What are the different types of forge welding? Explain any two types.	7 Marks
	b)	Explain submerged are welding and write merits and demerits.	7 Marks

UNIT-V

9	a)	Explain thermit welding and given their applications.	7 Marks
	b)	Distinguish between brazing, soldering and welding.	7 Marks
		(OR)	
10	a)	Describe plasma Arc welding and given their applications.	7 Marks
	b)	What is frication welding? Give their advantage and limitations.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

PROBABILITY AND STOCHASTIC PROCESSES

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) A Supplier receives 1000 shirts from a textile company. The probability that a shirt is defective is 10^{-2}. Find the probability that there will be more than five shirts are defective. 7 Marks

b) State and prove Baye's theorem. 7 Marks

(OR)

2 a) Suppose that P(A) = 0.7 and P(B) = 0.5 and P[(A∩B)'] = 0.1. 7 Marks
Find i) P[(A∩B)]. ii) P[(A/B)]. iii) P[(B/A)].

b) Define probability based on set theory and fundamental axioms. 7 Marks

UNIT-II

3 a) Find pdf fx (x) corresponding to the characteristic function defined 7 Marks
as $\varphi_x(w) = \begin{cases} 1-w & |w|<1 \\ 0 & |w|>1 \end{cases}$.

b) State and prove Chebychev's inequality. 7 Marks

(OR)

4 a) State four properties of conditional density function. 7 Marks

b) Find the MGF of a Binomial distribution and hence find mean and variance. 7 Marks

UNIT-III

5 a) Find the skew for Gaussian distributed random variable. 6 Marks

b) Explain about the monotonic transformations for a continuous random variable. 8 Marks

(OR)

6 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

UNIT-IV

7 a) Explain the meaning of "Mean - Ergodic processes "and Correlation -Ergodic processes. 6 Marks

b) Explain linear time invariant system and time invariant system transfer function. 8 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) Define thermal noise and explain its relationship to the bandwidth and temperature. 7 Marks

b) An amplifier with gain = 30dB and BN = 25 kHz is found to have T_0 = 120 K. Find Te and Noise figure. 7 Marks

(OR)

10 a) Explain the difference between correlated and uncorrelated noise. 6 Marks

b) Discuss and explain Noise factor and Noise figure equivalent noise temperature. 8 Marks

CODE No.:14BT30402 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

SEMICONDUCTOR DEVICES AND CIRCUITS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) 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 $30V_{rms}$. Determine the resistance of the load and the efficiency of the circuit. 7 Marks

(OR)

2 a) Explain the V-I characteristics of PN diode and Zener diode. Differentiate them. 7 Marks

b) Draw the circuit of a full wave rectifier circuit with **L** section filter and derive the expression for ripple factor. 7 Marks

UNIT-II

3 a) Explain about base-width modulation with relevant waveforms. 5 Marks

b) Why transistor is considered as current control device? Explain. 5 Marks

c) What is the condition for thermal stability? 4 Marks

(OR)

4 a) Explain how you would locate the operating point using the load line. 7 Marks

b) With necessary circuit diagram, explain the collector to base bias arrangement and derive at an expression for its stability factor. 7 Marks

UNIT-III

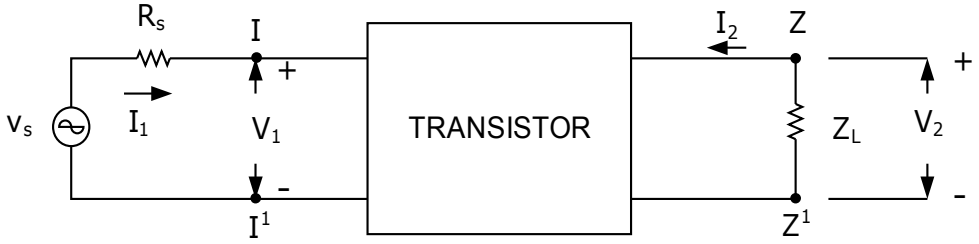
5 a) Explain the h-parameter equivalent circuit of a transistor applicable to any configuration. 7 Marks

b) Derive expressions for current gain, input impedance, output impedance and voltage gain of the CC configuration using hybrid parameter equivalent circuit. 7 Marks

(OR)

6 a) 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 about the small signal model of JEET. How do you determine the parameters r_d, g_m and μ experimentally?	5 Marks
	b)	Compare and contrast EMOSFET and DMOSFET. Mention its applications.	5 Marks
	c)	Derive the expression for voltage gain of JFET model for self bias configuration.	4 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 the operation of Tunnel diode and draw its equivalent circuit.	8 Marks
	b)	With neat diagram, explain about Varactor diode.	6 Marks

(OR)

10	a)	Write the applications of UJT.	6 Marks
	b)	Explain the working principle of SCR with the help of V-I characteristics. Mention its applications.	8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

ELECTRONIC DEVICES AND CIRCUITS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the terms: i) Static resistance. ii) Dynamic resistance. iii) Junction capacitance. iv) Reverse resistance of diode.	7 Marks
	b)	The diode current is 0.6mA when the applied voltage is 400mV and 20mA when the applied voltage is 500mV. Determine **η**. Assume kT/q = 25mV.	7 Marks
		(OR)	
2	a)	Explain the volt ampere characteristics of PN diode.	7 Marks
	b)	Draw the circuit diagram of half wave rectifier. Explain its working. What is the frequency of ripple in its output?	7 Marks

UNIT-II

3	a)	Explain the working of a PNP transistor.	8 Marks
	b)	Compare CE, CB and CC configurations.	6 Marks
		(OR)	
4	a)	Explain how transistor is used an amplifier.	7 Marks
	b)	Derive the relationship between **α** and **β**.	7 Marks

UNIT-III

5	a)	Explain about different regions of output characteristics of JFET.	7 Marks
	b)	A FET has a drain current of 4mA, if I_{DSS} = 8mA and $V_{GS\ (off)}$ = -6V. Find the values of V_{GS} and V_P.	7 Marks
		(OR)	
6	a)	With neat sketch, explain the characteristics of MOSFET in enhancement mode.	7 Marks
	b)	Explain two biasing circuits for JFET.	7 Marks

UNIT-IV

7	a)	Enumerate effects of negative feedback on various characteristics of the amplifier.	7 Marks
	b)	An amplifier has a mid band gain of 125 and a bandwidth of 250kHz. If 4% negative feedback is introduced, find the new bandwidth and gain.	7 Marks
		(OR)	
8		Explain the following: i) Loop gain. ii) Band width. iii) Frequency distortion. iv) Reduction in noise. v) Increased stability.	14 Marks

UNIT-V

9	a)	Explain two transistor analogy of an SCR.	7 Marks
	b)	Explain the terms holding current, latching current, firing angle and conduction angle of an SCR.	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

CODE No.:14BT30501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

DATA STRUCTURES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	What is a circular linked list? Write an algorithm for insertion and searching an element.	14 Marks
	(OR)	
2	Explain about list ADT with various functions.	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	Write an algorithm for converting infix expression to postfix form.	14 Marks

UNIT-III

5	Define binary tree. Write recursive methods for the Binary Tree traversals and explain.	14 Marks
	(OR)	
6	Show the result of inserting 10, 12, 11, 14, 6, 5, 8, 15, 39, 7 one at a time into an initially empty binary heap.	14 Marks

UNIT-IV

7	What is a **B*** tree and **B+** tree? Illustrate with examples.	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	Explain in detail the concept of Hashing. Explain about linear probing with example.	14 Marks

CODE No.:14BT30502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

DIGITAL LOGIC DESIGN

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the following. i) BCD. ii) Excess-3 code. iii) Gray code. iv) Binary code.	8 Marks
	b)	Represent the decimal number 8620 in i) BCD. ii) Excess-3 code. iii) 2,4,2,1 code. iv) Binary code.	6 Marks
		(OR)	
2	a)	What is canonical form? Explain different canonical forms with an example.	7 Marks
	b)	Draw the logic diagram for the given Boolean expression $F = A\overline{B} + \overline{C}D + ABC$.	7 Marks

UNIT-II

3	a)	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 two-level form NAND-AND. F (A,B,C,D) = ∑0, 1, 2, 3, 4, 8, 9, 12	6 Marks
		(OR)	
4		Obtain the simplified expression in products of sums i) $F(x,y,z) = \pi(0,1,4,5)$ ii) $F(A,B,C,D) = \pi(0,1,2,3,4,10,11)$ iii) $F(w,x,y,z) = \pi(1,3,5,7,13,15)$	14 Marks

UNIT-III

5	a)	What is multiplexer? Explain it.	5 Marks
	b)	Construct 16 x 1 multiplexer using 4 x 1 multiplexers.	9 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)	Design Modulo-7 counter with a neat diagram.	7 Marks
	b)	Explain in detail about shift register with an example.	7 Marks
		(OR)	
8		Describe the operation of the SR Latch using NAND gate with the help of truth table, transition table and the circuit.	14 Marks

UNIT-V

9	a)	Discuss about Sequential Programmable Devices.	6 Marks
	b)	Differentiate PAL and PLA in detail.	8 Marks
		(OR)	
10		Explain in detail about Error Detection and Error Correction codes with examples.	14 Marks

CODE No.:14BT31002 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

SENSORS AND TRANSDUCERS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define 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)	List the static characteristics of a measuring system.	7 Marks
	b)	Derive and sketch the impulse response of a second order system.	7 Marks

UNIT-II

3	a)	Explain the construction of a resistive hygrometer and list its applications.	7 Marks
	b)	Explain the working principle of hot wire resistive transducer with a neat diagram.	7 Marks
		(OR)	
4	a)	What is gauge factor? Derive the expression for gauge factor in a strain gauge.	7 Marks
	b)	Explain the construction and working of a metal strain gauge.	7 Marks

UNIT-III

5	a)	Demonstrate the working of electromagnetic sensor based tachogenerator.	7 Marks
	b)	Discuss about frequency response of capacitive transducers.	7 Marks
		(OR)	
6	a)	Explain how LVDT can be used as a device to measure force.	7 Marks
	b)	Explain the working of variable reluctance sensor.	7 Marks

UNIT-IV

7	a)	Explain the principle and working of a thermocouple.	7 Marks
	b)	Write short notes on pyroelectric effect and list the pyroelectric materials.	7 Marks
		(OR)	
8	a)	State photvoltaic 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 the applications of semiconductor sensors.	7 Marks
	b)	Explain the working principle of an absolute encoder with neat diagrams.	7 Marks
		(OR)	
10	a)	Write short notes on MEMS.	7 Marks
	b)	Explain the sensing methods of ultrasonic sensors.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

DISCRETE MATHEMATICAL STRUCTURES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Show that $\neg (P \vee Q) \Leftrightarrow \neg P \wedge \neg Q$.	7 Marks
	b)	Obtain principal conjunctive normal form of $(\neg P \rightarrow R) \wedge (Q \Leftrightarrow P)$.	7 Marks
		(OR)	
2	a)	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 P = { 1,2,3,4,6,12 }and ≤ be the relation on P such that $x \leq y$ if and only if x divides y.	7 Marks
	b)	Draw the Hasse diagram for the poset **(P, ≤).**	7 Marks

UNIT-III

5	a)	Define a semi group and a monoid. Give an example for a semi group but not monoid.	7 Marks
	b)	Prove that a group in which every element has its own inverse, is abelian group.	7 Marks
		(OR)	
6	a)	**(G,*)** is a group and **(a,b)€G** then show that $(a * b)^{-1} = b^{-1} * a^{-1}$.	7 Marks
	b)	Every finite group of order "n" is isomorphic to a permutation group of degree 'n'. Prove it.	7 Marks

UNIT-IV

7	a)	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 $a_n - 9a_{n-1} - 26a_{n-2} - 24a_{n-3} = 0$ where $a_0=0$, $a_1=1$ and $a_2=10$.	7 Marks
	b)	How many ways can 5 day's be chosen from each of the 12 months of an ordinary year of 365 day's.	7 Marks

UNIT-V

9	a)	Explain Complete graph and Bipartite graph with an example.	7 Marks
	b)	Prove that in any graph the number of vertices of odd degree is even.	7 Marks
		(OR)	
10	a)	Show that the complete graph k_s is non planar.	7 Marks
	b)	Explain BFS algorithm with example.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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) Reduce the matrix $A = \begin{bmatrix} 1 & 2 & 1 & 0 \\ -2 & 4 & 3 & 0 \\ 1 & 0 & 2 & -8 \end{bmatrix}$ to canonical form (normal) and find its rank. 7 Marks

b) Two eigen values of the matrix $A = \begin{bmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix}$ are equal to 1 each. Find the eigen values and eigen vectors of the matrix A^{-1}. 7 Marks

(OR)

2 a) Investigate the values of λ and μ so that the equations 7 Marks
2x+3y+5z = 9
7x+3y-2z = 8
2x+3y+λ z =μ
Have (i) no solution (ii) a unique solution (iii) an infinite number of solutions.

b) Verify Cayley-Hamilton theorem for the matrix $A = \begin{bmatrix} 1 & 4 \\ 2 & 3 \end{bmatrix}$ and find its inverse. Also express $\mathbf{A^5-4A^4-7A^3+11A^2-A-10I}$ as a linear polynomial in A. 7 Marks

UNIT-II

3 a) Using Lagrange's interpolation formula find the value of 'y' when x = 10 if the following values of x and y are given. 7 Marks

x :	5	6	9	11
y :	12	13	14	16

b) Evaluate $\sqrt{24}$ to four decimal places using Newton – Raphson method. 7 Marks

(OR)

4 a) Using Newton's forward interpolation formula and the given table of values, obtain the value of f(x) when x = 1.4. 7 Marks

x	1.1	1.3	1.5	1.7	1.9
f(x)	0.21	0.69	1.25	1.89	2.61

b) Find the curve of best fit of the type $\mathbf{y = a\, e^{bx}}$ to the following data by the method of least squares. 7 Marks

x:	1	5	7	9	12
y:	10	15	12	15	21

UNIT-III

5 a) Evaluate $\int_{o}^{n} o^{z}\sqrt{\cos\theta}\ d\theta$ 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. 7 Marks

Find y (0.2) using Runge-Kutta method of order 4 taking h= 0.1

(OR)

6 a) The population of a certain town is shown in the following table. Estimate the rate of growth of the population in the year 1981. 7 Marks

Year x :	1951	1961	1971	1981	1991
population y : (in thousands)	19.96	39.65	58.81	77.21	94.61

b) Find the solution of $\frac{dy}{dx} = y + x$, $y(0) = 1$, at $x = 0.2$ in steps of 0.1 using modified Euler's method. 7 Marks

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) = $\frac{1}{x^{z}+1}$ 7 Marks

(OR)

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

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

b) Using suitable integral representation, show that $\int_{0}^{\infty} \frac{\cos\lambda x}{x^2+1} dx = \frac{\pi}{2} e^{-\lambda}, \lambda \geq 0$ 7 Marks

UNIT-V

9 a) Form the partial differential equation by eliminating the arbitrary function ϕ from ϕ **(y/x, x + y + z)** = 0. 4 Marks

b) A tightly stretched flexible string has its ends fixed at x = 0 and $x = L$. At time $t = 0$, the string is given a shape defined by $f(x) = \lambda x(L-x)$, where λ is a constant and then released. Find the displacement at any point x of the string at any time t>0. 10 Marks

(OR)

10 a) Form the partial differential equation by eliminating the arbitrary functions f_1 and f_2 from $z = x f_1(x + t) + f_2(x + t)$. 4 Marks

b) A tightly stretched string with fixed end points $x = 0$ and $x = 1$ is initially in a position given by $y = y_0 \sin^3(\pi x)$. If it is released from rest from this position, find the displacement $y(x, t)$ using variable separable method. 10 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define Beta and Gamma functions and derive the relation between them. 7 Marks

b) Show that $\frac{d}{dx}\left[x^n J_n(x)\right] = x^n J_{n-1}(x)$. 7 Marks

(OR)

2 a) Express $\int_0^1 x^m(1-x^n)^p\,dx$ in terms of gamma function and evaluate $\int_0^1 x^5(1-x^3)^{10}\,dx$. 7 Marks

b) Derive orthogonality relation of Bessel functions. 7 Marks

UNIT-II

3 a) Show that an analytic function of constant modulus is constant. 7 Marks

b) Determine the analytic function $\boldsymbol{f(z) = u + iv}$ given that $\boldsymbol{3u + 2v = y^2 - x^2 + 16x}$. 7 Marks

(OR)

4 a) If $f(z)$ is a regular function of z, prove that $\left(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2}\right)|f(z)|^2 = 4|f'(z)|^2$. 7 Marks

b) Find the conjugate harmonic of $u = e^{x^2-y^2}\cos 2xy$. Hence find $f(z)$ in terms of z. 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 7 Marks

(i) $|z| < 1$ (ii) $|z| > 4$ (iii) $1<|z|<4$.

UNIT-IV

7 a) Find the residue of $\frac{ze^z}{(z-1)^3}$ at its poles. 7 Marks

b) Evaluate $\int_0^{2\pi} \frac{\cos 2\theta}{5+4\cos\theta} d\theta$ using Residue theorem. 7 Marks

(OR)

8 a) Prove that $\int_{-\infty}^{\infty} \frac{x^2-x+2}{x^4+10x^2+9} dx = \frac{5\pi}{2}$. 7 Marks

b) Evaluate $\int_c \frac{z^3}{(z-1)^2(z-3)} dz$ where c is $|z| = 2$ by Residue theorem. 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

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

PROBABILITY AND STATISTICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Find the Mean and Variance of Mathematical Expiation. 7 Marks

b) The probability density function of a continuous random variable 'X' is given by 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) In attest on 2000 electric bulbs, it was found that the life of a particular make, was normally distributed with an average life of 2040 hours and standard deviation of 60 hours. Find the number of bulbs likely to burn for 7 Marks
i) more than 2150 hours ii) less than 1950 hours
iii) more than 1920 hours and but less than 2160 hours

b) Assuming 50% of all engineering students are good in mathematics. Determine the probability that among 18 engineering students 7 Marks
i) exactly 10 ii) at least 10 iii) at most 8 are good in mathematics

(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) 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 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

(OR)

6 a) The numbers of defective washers in a workshop of 20 samples containing 500 washers are 25, 30, 32, 28, 35, 27, 28, 30, 33, 35, 38, 40, 21, 26, 24, 40, 29, 28, 26, 38. Calculate the values for central line and the control units for P-Chart. 7 Marks

b) Calculate Karl Pearson's correlation coefficient for the following paired data 7 Marks

x	28	41	40	38	35	33	40	32	36	33
y	23	34	33	34	30	26	28	31	36	38

What inference would you draw from the estimate?

UNIT-IV

7 a) Define the following 8 Marks

i) Sampling distribution ii) Standard error

iii) Errors in sampling iv) Level of significance

b) According to the norms established for a mechanical aptitude test, persons who are 18 years old have an average height of 73**.**2 with a standard deviation of 8**.**6. If 4 randomly selected persons of that age averaged 76**.**7, test the hypothesis **m = 73.2** against the alternative hypothesis **m > 73.2** at the 0.01 level of significance. 6 Marks

(OR)

8 a) A manufacturer claimed that atleast 95% of the equipment which he supplied to factory conformed to specifications. An examination of a sample of 200 pieces of equipment revealed that 18 were faulty. Test his claim at 5**%** level of significance. 7 Marks

b) Samples of students were drawn from two universities and from their weights in kilograms, mean and standard deviations are calculated and shown below. Make a large sample test to test the significance of the difference between the means. 7 Marks

	Mean	S.D.	Size of the sample
University A	55	10	400
University B	57	15	100

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

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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)	Write down the impacts of modern agriculture on environment.	7 Marks
	b)	Briefly explain the types and causes of soil erosion along with soil conservation practices.	7 Marks
		(OR)	
2	a)	Write down the major uses of forest resources and explain the causes and consequences of deforestation.	7 Marks
	b)	Write down the types of minerals, types of mining and explain the impacts of mining.	7 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		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)	Define sustainable development and how can we achieve it.	7 Marks
	b)	Explain the role of Environmental Protection Act.	7 Marks
		(OR)	
8		Write about Air Act, Water Act and Forest Conservation Act.	14 Marks

UNIT-V

9		Present 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

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CODE No.:14BT30102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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 bar of 50mm diameter was subjected to 250 kN axial pull and the resulting extension was found to be 0.12mm over the gauge length of 200mm. Also the corresponding contraction in diameter was recorded as 0.009mm. Determine the following: 14 Marks

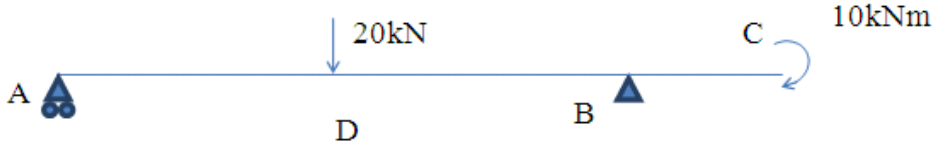
i) Poisson's ratio. ii) Bulk modulus.
iii) Modulus of rigidity. iv) Young's modulus.

(OR)

2 Two vertical rods one of steel and other of copper are rigidly fixed at the top and 80cm apart. Diameter and length of each rod are 3cm and 3.5m respectively. A cross bar fixed to the rods at lower ends carries a load of 6kN such that the cross bar remains horizontal even after loading. Find the stress in each rod and position of load on the bar. Take E for steel as 2×10^5 N/mm^2 and for copper as 1×10^5 N/mm^2. 14 Marks

UNIT-II

3 Sketch the shear force and bending moment diagrams showing the salient values for the loaded beam shown in the figure below; AD=5m; DB=4m and BC=2m. 14 Marks



(OR)

4 What is point of contraflexure? Locate the same for an overhanging beam of simply supported span of 10m, with two sides overhanging portions of 2.5m each, subjected to a UDL of 3kN/m and end concentrated loads of 5kN. Draw the BMD and SFD. 14 Marks

UNIT-III

5 A Simply supported beam of length 6m carries a U.D.L. of 20 kN/m throughout its length and a point of 30 kN at 2m from the right support. Draw the shear force and bending moment diagram. Also find the position and magnitude of maximum Bending moment. 14 Marks

(OR)

6 a) Explain what do 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 8m. The cross section of the beam is rectangular of size 300mm x 500mm with a circular hole of diameter 200mm with its centre at 200mm from the soffit. The allowable stresses in tension and compression are 150 N/mm^2 and 100 N/mm^2 respectively. 7 Marks

UNIT-IV

7 Derive expressions for the following of a closely coiled helical spring subjected to axial load W. 14 Marks

Determine:

i) The deflection of spring.
ii) Maximum shear stress in wire.
iii) Stiffness of the spring.

(OR)

8 A shaft is to transmit a power of 100MW rotating at 200RPM. Design the inner and outer diameter of the shaft if the diameters ratio is 0.6 and the allowable shear stress is limited to 60MPa. Also determine the angle of twist per unit length if the rigidity modulus of the material of shaft is 80GPa. 14 Marks

UNIT-V

9 A hollow cylindrical cast iron column of 150mm external diameter and 15mm thickness, 3.6m length is hinged at one end and fixed at the other. 14 Marks

Find: i) The ratio of Euler's and Rankine's loads

ii) The length for which the critical load by Euler's and Rankine's formula will be equal.

Take $E = 8.4 \times 10^4$ N/mm², $f_c = 525$ N/mm² and $\alpha = 1/1600$.

(OR)

10 Derive an expression for the shrink fit of a compound cylinder. 14 Marks

CODE No.:14BT30103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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)	Explain with the help of neat sketch 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)	With the help of neat sketches, explain the various defects in Timber.	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 of types of steel and their properties.	7 Marks

UNIT-III

5	a)	List various types of cements. Distinguish between Ordinary Portland cement and Pozzolana Portland cement.	7 Marks
	b)	Describe the properties of fresh concrete and how is the workability of fresh concrete measured easily in the field?	7 Marks
		(OR)	
6	a)	What is hydration of Portland cements? Describe briefly the concept of initial and final setting times of cement.	7 Marks
	b)	What is meant by workability of concrete? How the workability of concrete is measured in the field and in the laboratory?	7 Marks

UNIT-IV

7		Explain the Schmidts Rebound Hammer test with the help of neat sketch.	14 Marks
		(OR)	
8		Explain the various techniqueJs of measuring Pulse velocity through concrete with the help of neat sketches.	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)	Describe briefly the different types of shrinkage. What are the factors affecting shrinkage 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}	15 N/mm^2
ii) Maximum size of aggregate	20 mm
iii) Shape of coarse aggregate	Angular
iv) Degree of workability desired, compacting factor	0.85
v) Type of exposure	Moderate
Test data for concrete making materials	
Specific gravity of cement	3.15
Specific gravity of coarse aggregate	2.70
Specific gravity of fine aggregate	2.62
Water absorption (air dry to saturated surface dry)	
Coarse aggregate, percent	0.5%
Fine aggregate	1.61%
Surface moisture	
Coarse aggregate	Nil
Fine aggregate	2%

vi) Compressive Strength of cement at 28 days satisfies the requirement of IS: 269-1989

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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 Differentiate between: 14 Marks

i) Liquids and gases.

ii) Real fluids and ideal fluids.

One litre of crude oil weighs 9.6 N. Calculate its specific weight, density and specific gravity.

(OR)

2 State and prove the Pascal's law. Determine the total pressure on a circular plate of diameter 1.5m which is placed vertically in water in such a way that the centre of the plate is 3m below the free surface of water. Find the position of centre of pressure also. 14 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 0.02m^3/s through a 0.15m diameter 300m long pipe. Calculate the pressure drop, average shear stress at the wall of the pipe and the power required to maintain the flow, if the pipe is inclined at 15 degree with the horizontal and the flow is in upward direction. 14 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 9.81N/cm^2 and 5.886 N/cm^2 respectively and the discharge is 200 litres/sec, 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 a) Determine the pressure gradient, shear stress at the two horizontal parallel plates and discharge per meter width for the laminar flow of oil with a maximum velocity of 2 m/sec between two horizontal parallel fixed plates which are 100mm a part. Given $\mu = 2.4525$ N s/m². 7 Marks

b) Describe Reynold's experiment to demonstrate the two types of flow. 7 Marks

(OR)

8 a) Prove that the velocity distribution of viscous flow between two parallel plates when both plates are fixed across a section parabolic in nature. Also prove that maximum velocity is equal to one and half times the average velocity. 7 Marks

b) Water is flowing between two large parallel plates which are 2m a part. Determine maximum velocity, pressure drop per unit length and shear stress at walls of the plate, if the average velocity is 0.4 m/sec. Take viscosity of water as 0.01 poise. 7 Marks

UNIT-V

9 Explain the procedure for solving problem by Buckingham's π theorem in briefly. 14 Marks

(OR)

10 Explain the following: 14 Marks

i) Geometric Similarity.
ii) Kinematic Similarity.
iii) Dynamic Similarity.

CODE No.:14BT30201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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 (ε_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 Biot-Savarts law. Derive an expression for magnetic field at a point due to a straight filamentary conductor carrying current.	7 Marks
	b)	Find the force per meter length between two infinitely long parallel conductors carrying current I_1 and I_2 respectively in the same direction and placed at a distance 'D' apart.	7 Marks

(OR)

6	a)	Define magnetic potential. Differentiate between scalar and vector magnetic potentials.	7 Marks
	b)	Derive the expression for magnetic field due to a magnetic dipole.	7 Marks

UNIT-IV

7	a)	Explain the classification of magnetic materials.	7 Marks
	b)	Derive the expression for magnetic energy density in a magnetic field.	7 Marks

(OR)

8	a)	Calculate the self-inductance per unit length of an infinitely long solenoid.	7 Marks
	b)	Explain about the magnetic boundary conditions.	7 Marks

UNIT-V

9 a) What is the concept of displacement displacement current? Explain. 7 Marks

b) A straight conductor of 0.2m lies on the X-axis with one end at origin. The conductor is subjected to a magnetic fluxdensity B = 0.04 a_y Tesla, and velocity $\boldsymbol{v}$ = 2.5 sin 10^3.t .a_z m/s. Calculate the motional electric field intensity and e.m.f induced in the conductor. 7 Marks

(OR)

10 a) Explain about the transformer e.m.f and also derive the expression. 7 Marks

b) State and prove Poynting theorem. 7 Marks

CODE No.:14BT30202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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 principle of energy conversion of electromechanical system.	7 Marks
	b)	Explain the mechanical energy and work done in singly excited system when actual displacement occurs.	7 Marks
		(OR)	
2	a)	Write in brief about the multiple-excited magnetic field system.	7 Marks
	b)	For a singly excited system, derive the expression for magnetic field energy stored.	7 Marks

UNIT-II

3	a)	Define the terms: back pitch, front pitch with reference to dc armature windings.	4 Marks
	b)	Draw the developed view of 24- slot, 2 pole lap connected armature winding clearly indicating position of brushes and commutator.	10 Marks
		(OR)	
4	a)	Derive **emf** equation of **dc** machine from fundamentals.	7 Marks
	b)	A 4-pole wave wound **dc** generator runs at 1000 r.p.m when supplying power to 330 lamps each rated at 60W, 110V. It has a shunt field current of 2A. There are 90 commutator segments with brush width equal to 1.1 times the width of commutator segment. The self-inductance of each coil is 0.025mH. Determine the reactance voltage if commutation is (i) linear (ii) sinusoidal.	7 Marks

UNIT-III

5	a)	Discuss the conditions required for parallel operation of i) **dc** shunt generators ii) **dc** series generators	7 Marks
	b)	Two shunt generators are operating in parallel, the **emf** induced one machine is 260V and that of second machine is 270V. They together supply a load current of 1800A. 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 **dc** generator	7 Marks
	b)	Sketch the external characteristics of (i) **dc** shunt generator. (ii) **dc** compound generator. Explain how **dc** compound generator can be operated as level compounding generator.	7 Marks

UNIT-IV

7	a)	Explain with circuit diagram the armature voltage control method of speed control in **dc** motors.	7 Marks
	b)	A 220V shunt motor has an armature resistance of 0.5 ohm and takes a current of 40A on full load. By how much must the main flux be reduced to raise the	7 Marks

speed by 50% if the developed torque is constant?

(OR)

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

b) The speed of a 50 h.p (37.3 kW) series motor working on 500V 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) Explain the experimental procedure to conduct Hopkinson's test with help of circuit diagram. 7 Marks

b) Field's test on two mechanically coupled **dc** series machines gave the following data: 7 Marks

	Armature voltage (V)	Field winding drop (V)	Armature Current (A)
Motor	500	38	50
Generator	400	36	38

Resistance of each armature winding is 0.2 ohm. Calculate efficiency of each machine at this load.

(OR)

10 a) Explain how different components of stray losses can be separated using an experiment. 7 Marks

b) Describe a suitable method of determining efficiency of dc series motor. 7 Marks

CODE No.:14BT30203 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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) Obtain the expressions for converting Delta connected resistive network into Star connected resistive network. 7 Marks

b) A Wheatstone bridge ABCD is arranged as follows: AB=10Ω, BC=30Ω, CD=15Ω and DA=20Ω. A 2V battery of internal resistance 2Ω is connected between A and C with A positive. A galvanometer of resistance 40Ω is connected between B and D. Find the magnitude and direction of galvanometer current. 7 Marks

(OR)

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

b) Find current through the resistor r_2 by nodal analysis for the circuit shown in Fig.1. 8 Marks

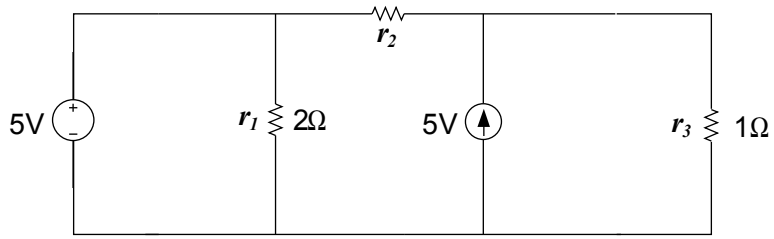

Fig.1

UNIT-II

3 a) A current source i(t) is applied to a series LCR circuit shown in Fig.2. Find voltage across each element. 7 Marks

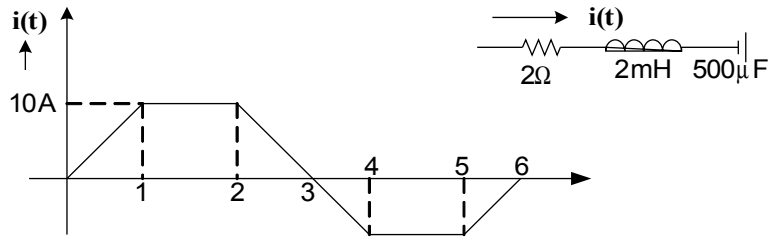

Fig.2

b) The Q factor of a RLC circuit is 5 at its resonance frequency of 1kHz. Assuming the power dissipation of 250W when the current drawn is 1A, find the circuit parameters and bandwidth of the circuit. 7 Marks

(OR)

4 a) Derive the resonant frequency of parallel combination of series RC and RL circuits. 8 Marks

b) Distinguish between series and parallel Resonance. 6 Marks

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. 14 Marks

i) The line current. ii) Total power.

iii) Also 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.

UNIT-IV

7 a) Derive the relation among self-inductance, mutual inductance and coefficient of coupling. 7 Marks

b) Obtain the equation for the total inductance when two coils are connected in 7 Marks

i) Series aiding and opposing.

ii) Parallel aiding and opposing.

(OR)

8 a) Two long single layer solenoids have the same length and the same number of turns but are placed co-axially one within the other. The diameter of the inner coil is 8cm and that of the outer coil is 10cm. Calculate the co-efficient of coupling. 8 Marks

b) Explain the importance of dot convention in coupled circuits. 6 Marks

UNIT-V

9 Obtain the Norton's equivalent network between the terminals A & B in Fig. 3. 14 Marks

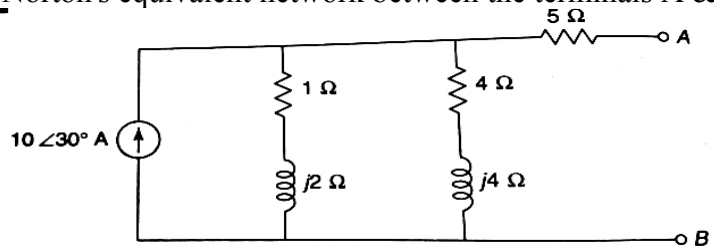

Fig. 3

(OR)

10 Determine the impedance Z_L so that maximum power can be transferred to it in the network shown in Fig. 4. Find maximum power. 14 Marks

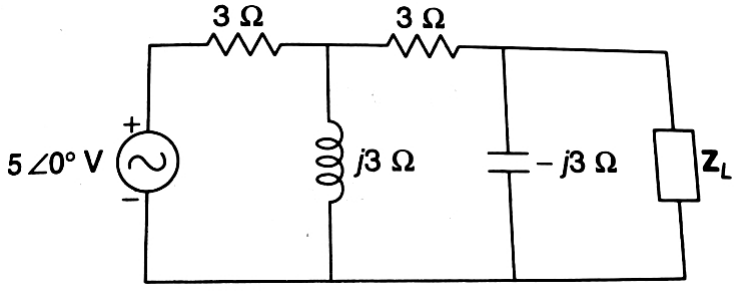

Fig. 4

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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)	Explain, how to draw the equivalent circuit of a single phase transformer.	8 Marks
	b)	Explain the various types of losses in a single phase transformer.	6 Marks
		(OR)	
4	a)	Explain the construction and working principle of a single phase transformer.	8 Marks
	b)	The maximum flux density in the core of a 250/3000 V, 50 Hz single phase transformer is 1.2 Wb/m². If the EMF per turn is 8 Volts, determine: i) Primary and secondary turns. ii) Area of the core.	6 Marks

UNIT-III

5	a)	Explain, what is meant by phase sequence.	4 Marks
	b)	For a balanced three phase three wire system with star connected load for which the line voltage is 230 Volts and impedance per phase is (6+J8) Ω. Find the phase voltage, phase current, line current, power factor and power consumed in each phase.	10 Marks
		(OR)	
6		Explain, how to measure the power in a three phase circuit using Two Wattmeter method with the necessary derivation.	14 Marks

UNIT-IV

7		Explain the construction details and the principle of operation of a three phase Induction motor.	14 Marks
		(OR)	
8	a)	Explain the classification of three phase alternators.	7 Marks
	b)	Derive the EMF equation of an alternator.	7 Marks

UNIT-V

9		Explain the construction and the principle of operation of Universal motor. Also give the applications of this motor.	14 Marks
		(OR)	
10		Explain the construction and the principle of operation of stepper motor. Also give the applications of this motor.	14 Marks

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CODE No.:14BT30232 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

NETWORK ANALYSIS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

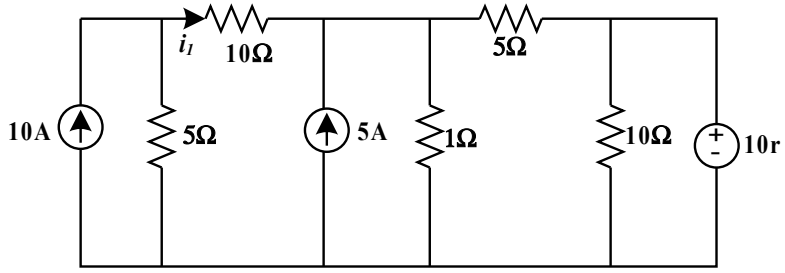
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define the following terms: 8 Marks
i) Voltage ii) Power
iii) Linear and non-linear elements iv) Active and Passive elements

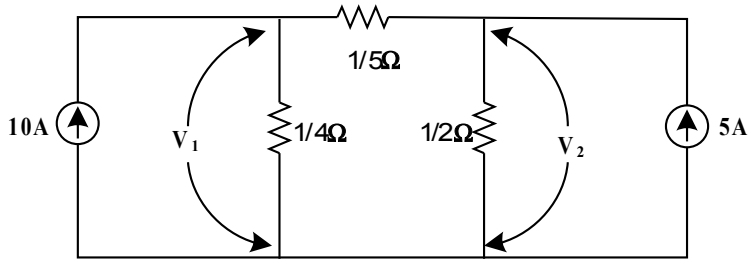
b) Obtain the current $\mathbf{i_1}$ for the circuit using KVL. 6 Marks



(OR)

2 a) Three resistances of equal value are available. Find 7 Marks
i) The total equivalent conductance and total equivalent resistance ratio.
ii) 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.

b) Find the voltages V_1 and V_2 as shown below. 7 Marks



UNIT-II

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

b) What is locus diagram? Draw and explain current locus diagram for a series RC circuit, with fixed resistance by deriving necessary expressions. 7 Marks

(OR)

4 Derive the expressions of resonant frequency, Quality factor and bandwidth of a series RLC resonance circuit with help of phasor diagrams. 14 Marks

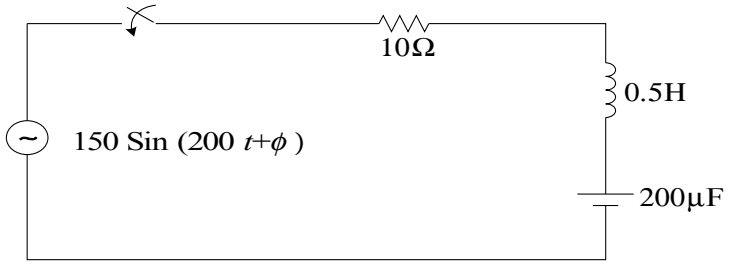
UNIT-III

5 a) Obtain the Transient response of RC series circuit for sinusoidal excitation. 7 Marks

b) A series RC circuit has R=20Ω and C=100μF. A voltage v = 200 Sin 314t is applied at t =2.14msec. Obtain an expression for current. Find the value of current after time 1msec from the switching instant. 7 Marks

(OR)

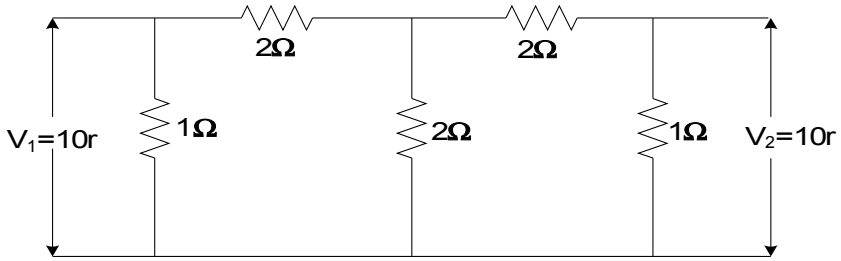
6 Determine the current equation for the circuit shown in figure, if the switch is closed when $\varphi=30^0$. 14 Marks



UNIT-IV

7 a) What is two port network? Obtain the equations of admittance parameters of a two port network. 7 Marks

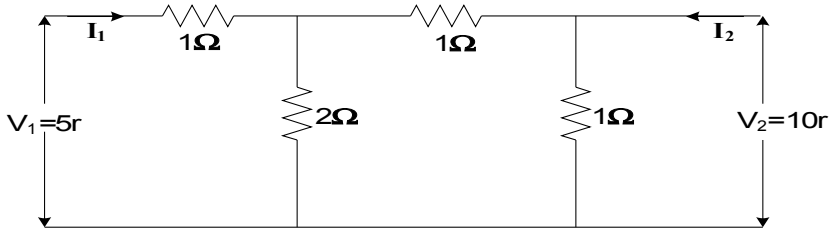
b) Obtain open loop circuit parameters and loop equations of the network shown in figure. 7 Marks



(OR)

8 a) List out the classification and applications of each filter. 8 Marks

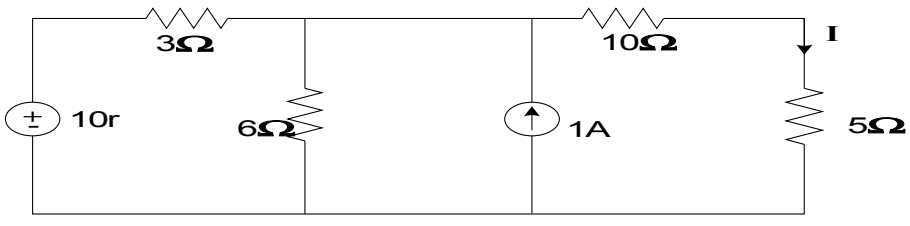
b) Obtain transmission parameters of the network shown in figure. 6 Marks



UNIT-V

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

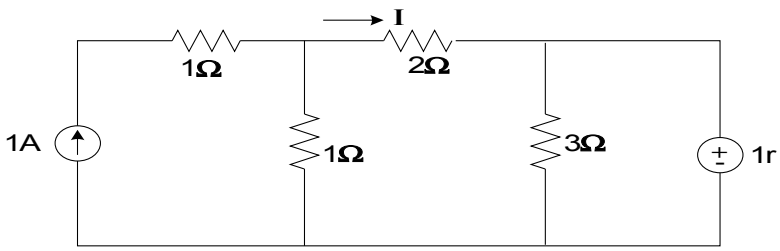
b) Find the current 'I' in the circuit shown in figure using Norton's theorem. 7 Marks



(OR)

10 a) State and explain Reciprocity theorem. 6 Marks

b) Find the current 'I' in the circuit shown in figure using super position theorem. 8 Marks


I
1Ω
2Ω
1A
1Ω
3Ω
1r

CODE No.:14BT30233 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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)	What are the passive and active elements? Explain the volt-current relationship of passive elements with examples.	7 Marks
	b)	A resistance R is connected in series with a parallel circuit comprising two resistances of 12 and 8 ohms. The total power dissipated in the circuit is 700 watts when the applied voltage is 200 V. Calculate the value of R.	7 Marks
		(OR)	
2	a)	Explain Kirchoff's laws with an example.	7 Marks
	b)	Obtain equivalent Delta when three equal resistances are connected in Star.	7 Marks

UNIT-II

3	a)	Explain the principle of operation of single phase transformer.	7 Marks
	b)	With neat diagram, explain the operation of fluorescent lamp.	7 Marks
		(OR)	
4	a)	Write short notes on Rod earthing.	7 Marks
	b)	Explain the operation of single phase capacitor start induction motor with neat diagram.	7 Marks

PART-B

UNIT-III

5		Define Welding. With a neat sketch, explain TIG process of 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 Absorption refrigeration system with a neat sketch.	7 Marks
	b)	Differentiate between Vapor Compression and Vapor Absorption systems.	7 Marks
		(OR)	
8	a)	Explain the following terms: i) Humidity ii) Dew point temperature iii) Psychrometric chart	7 Marks
	b)	Explain the winter air - conditioning system with a neat sketch.	7 Marks

UNIT-V

9	a)	Explain the working principle of multi stage reciprocating air compressor.	7 Marks
	b)	Explain the need of various earth moving equipments with neat sketches.	7 Marks
		(OR)	
10	a)	Explain the working principle of single stage compressor with neat sketch.	7 Marks
	b)	Write short notes on the following: i) Concrete mixer ii) Bull dozers	7 Marks

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CODE No.:14BT30234 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the expressions for energy stored in an inductor and capacitor.	6 Marks
	b)	Briefly explain about active and passive elements, lumped and distributed elements.	8 Marks

(OR)

2	a)	Three equal resistances are available. Derive the ratio of the equivalent resistances when they are connected in parallel and also the ratio of the current through each element when they are connected in parallel.	8 Marks
	b)	A resistor of 50Ω has a potential difference of 100V across it for 1 hour. Calculate power and energy consumed by resistor.	6 Marks

UNIT-II

3		Coil A having a resistance of 10 ohms and inductance of 0.2 H is connected in series with another coil B having a resistance of 30 ohms and inductance 0.1 H. The two coils in series are fed form 200V, 50Hz supply. Determine the voltage across each coil, power dissipated in each coil and the power factor of the combined series circuit: Draw the phasor (vector) diagram.	14 Marks

(OR)

4	a)	Define the following terms: i) Cycle. ii) Amplitude. iii) R.M.S value. iv) Average value of an alternating quantity.	7 Marks
	b)	A series R-C circuit with resistance value of R=10 ohms and capacitive reactance of Xc = 10 ohms is connected to an alternating sinusoidal voltage of RMS value 150 volts. Calculate the value of current, through the circuit voltage drop a cross each element and power consumed.	7 Marks

UNIT-III

5	a)	Explain the basic principle of DC motor.	7 Marks
	b)	Derive the expression for EMF generated in a DC generator.	7 Marks

(OR)

6	a)	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 50Hz systems. Calculate 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.	7 Marks

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	a)	Explain the working of P-N junction diode.	7 Marks
	b)	An a.c. voltage of peak value 20V is connected in series with a silicon diode and load resistance of 500Ω. If the forward resistance of diode is 10Ω, find i) Peak current through diode. ii) Peak output voltage .	7 Marks

(OR)

10	a)	Compare the characteristics of transistor amplifier in three configurations.	7 Marks
	b)	Explain the Crystal oscillator with neat diagram.	7 Marks

CODE No.:14BT30235 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

BASIC ELECTRICAL ENGINEERING

[Computer Science and Engineering, Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 What are the basic circuit components? With circuit symbols and equations explain each of them in detail. 14 Marks

(OR)

2 a) Derive the expression for equivalent capacitance 'C_{eq}' when three capacitances C_1, C_2, C_3 are connected in series. 8 Marks

b) A wire of length 50 cm moves in a direction at right angles to its length at 40 m/s in a uniform magnetic field of density 1.5 wb/m^2. Calculate the electro motive force induced in the conductor when the direction of motion is
(i) perpendicular to the field
(ii) inclined at 45 degrees to the direction of the field. 6 Marks

UNIT-II

3 a) Define following. 8 Marks
(i) Phase (ii) Phase difference (iii) Peak value
(iv) Peak-to-peak value. Also show them in diagram of sinusoidal wave.

b) Find the RMS value of the resultant current in a wire that carries a DC current of 25 A and a sinusoidal alternating current with peak value of 25 A. 6 Marks

(OR)

4 How generation of three phase AC voltage takes place? With appropriate circuit diagram and equations explain it clearly. 14 Marks

UNIT-III

5 a) List different types of DC generators. Also mention their applications. 7 Marks

b) Derive from first principles an expression for the EMF induced in a DC generator. 7 Marks

(OR)

6 a) Explain the principle of working of a DC motor. 6 Marks

b) A 4-pole, lap wound 750 r.p.m DC shunt generator has an armature resistance of 0.4Ω and field resistance of 200Ω. The armature has 720 conductors and the flux per pole is 30mWb. If the load resistance is 15Ω, determine the terminal voltage. 8 Marks

UNIT-IV

7 a) What is a transformer? Differentiate between a core-type and a shell-type transformer. 7 Marks

b) State and prove the condition for maximum efficiency of a transformer. 7 Marks

(OR)

8 a) Compare between single-phase and three-phase induction motors. 7 Marks

b) Discuss the principle of operation and applications of split-phase induction motor. 7 Marks

UNIT-V

9	a)	Give the classification of instruments.	7 Marks
	b)	List the advantages and limitations of permanent magnet moving coil instruments.	7 Marks

(OR)

10	a)	Compare between moving coil and moving iron instruments.	7 Marks
	b)	What is UPS? Discuss its operation and applications.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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 linear element, unilateral element, bilateral element, active element, passive element and potential difference.	8 Marks
	b)	Explain the terms Electro motive force, Electrical Power, Electrical Energy, Current and Resistivity of an element.	6 Marks
		(OR)	
2	a)	Two resistances 14 Ω and 19Ω are connected in parallel. A resistance of 12Ω is connected in series with the combination. A voltage of 120 V is applied across the entire circuit. Determine the power consumed in all the resistors.	8 Marks
	b)	Explain the concept of source transformations with suitable examples.	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)	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 constructional details of single phase transformer	8 Marks
	b)	Discuss the phasor diagram of single phase transformer operating on no load.	6 Marks
		(OR)	
8	a)	Explain the principle of Rotating Magnetic Field of three phase Induction motor.	8 Marks
	b)	Discuss about the principle operation of stepper motor.	6 Marks

UNIT-V

9	a)	Discuss various types of closed loop systems with illustrations.	8 Marks
	b)	Explain about linear and non linear systems with illustrations.	6 Marks
		(OR)	
10	a)	Determine transfer function of a series R-C circuit by considering unit step input and output across capacitor.	6 Marks
	b)	Discuss various block diagram reduction rules to determine transfer function.	8 Marks

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CODE No.:14BT30301 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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 25mm in diameter is encased in steel tube 30mm internal diameter and 35mm external diameter. The ends are rigidly attached. The composite bar is 600mm 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/mm² and E for Copper as 1×10^5 N/mm².	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 3cm diameter is enclosed centrally in a hollow copper tube of external diameter 50mm and internal diameter of 40mm. The composite bar is then subjected to an axial pull of 45 kN. If the length of each bar is equal to 150mm, determine: i) The stresses in the rod and tube ii) Load carried by each bar. Take E for steel as 2.1×10^5 N/mm² and E for Copper as 1.1×10^5 N/mm².	8 Marks

UNIT-II

3	a)	Derive the relations among loading, shear force and bending moment in a beam.	6 Marks
	b)	A cantilever beam of length 3 m carries an uniformly distributed load of 4 kN/m over a length of 1.8 m from its fixed end and a point load 7 kN at its free end. Draw the SF and BM diagrams.	8 Marks

(OR)

4	a)	How are the distributions of the loading, the shear force and bending moment related to each other? Are there any pre-conditions for the relationship?	4 Marks
	b)	What are the singularity functions commonly used for BM and SF?	3 Marks
	c)	Sketch a simply supported beam with some transverse and inclined loading. Draw the SF and BM diagrams for the same.	7 Marks

UNIT-III

5	a)	Differentiate between cantilever beam, continuous beam and overhanging beam.	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/mm². 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 100 mm × 200 mm is 0.4 N/mm². 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 5 cm above neutral axis.

UNIT-IV

7 a) List the different methods of determining beam deflections and explain the double-integration method for finding deflection of beam. 6 Marks

b) Derive an expression to find the deflection of a cantilever with a uniformly distributed load. 8 Marks

(OR)

8 A beam is of T-section, with flanges 10 cm x 1 cm and web 12 cm x 1 cm. What percentage of shearing force at any section is shared by the web? 14 Marks

UNIT-V

9 a) Show that the volumetric strain of a cylindrical shell is the sum of longitudinal strain and twice of hoop strain. 6 Marks

b) A closed cylindrical vessel made of steel plates 5 mm thick with plane ends, carries fluid under pressure of 6 N/mm². The diameter of the cylinder is 35cm and length is 85 cm. Calculate the longitudinal and hoop stresses in the cylinder wall and determine the change in diameter, length and Volume of the cylinder. Take $E=2.1 \times 10^5 N/mm^2$ and 1/m = 0.286. 8 Marks

(OR)

10 a) Deduce the simplified expressions for the maximum values of circumferential and radial stresses in thick cylinders when acted upon by (i) internal pressure only and (ii) external pressure only. 6 Marks

b) An 800 mm long closed-end copper tube of 72 mm internal diameter and 2 mm thickness is filled with water under pressure. Find the change in pressure if additional volume of 4000mm³ of water is pumped into the tube. Neglect any distortion of the end plates. 8 Marks
Take E=102 Gpa, K=2200 Mpa and Poisson's ratio=0.3.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

MATERIALS SCIENCE AND METALLURGY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Show that the packing efficiency of FCC and HCP unit cells are 74%.	7 Marks
	b)	Mark the planes (100), (110) and (111) in a cubic lattice. Mark all the directions that can exist on these planes and write the corresponding Miller indices of direction.	7 Marks

(OR)

2	a)	Define atomic packing factor? Calculate atomic packing factor for FCC.	7 Marks
	b)	Explain Henry's intercept method in grain size measurement.	7 Marks

UNIT-II

3	a)	Explain the phase diagram of binary isomorphous alloy system.	7 Marks
	b)	Explain Hume-rothery rules.	7 Marks

(OR)

4	a)	Explain the solidification of pure metals.	7 Marks
	b)	Draw an equilibrium diagram that illustrates existence of a peritectic reaction.	7 Marks

UNIT-III

5	a)	Explain any two types of case hardening with sketches.	7 Marks
	b)	Briefly explain the TTT diagram for eutectoid steel.	7 Marks

(OR)

6	a)	What is retained austenite? Why is it not desirable?	7 Marks
	b)	Write short notes on the following. i) Martempering. ii) Austempering.	7 Marks

UNIT-IV

7	a)	State the properties and applications of gray cast iron.	7 Marks
	b)	Write short notes on Titanium alloys.	7 Marks

(OR)

8	a)	Explain structure and properties of spheroidal cast iron.	7 Marks
	b)	Explain properties and applications of copper and its alloys.	7 Marks

UNIT-V

9	a)	Describe the atomization process of making powder with neat diagram.	7 Marks
	b)	What are the effects of sintering on the powder compact produced by pressing? Explain.	7 Marks

(OR)

10	a)	Distinguish between composites and alloys. Mention at least six examples of each.	7 Marks
	b)	Compare the relative advantages and limitations of metal-matrix composites and polymer-matrix composites.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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: i) Thermo dynamic state. ii) Quasistatic process. iii) Cyclic and non cyclic process.	9 Marks
	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 100kPa 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)	State and explain the first law of thermodynamics for a closed system undergoing a cycle. What is PMM1?	7 Marks
	b)	At the inlet to a certain nozzle, the enthalpy of the fluid passing is 3000kJ/kg and the velocity is 60m/s. At the discharge end, the enthalpy is 2762kJ/kg. The nozzle is horizontal and there is negligible heat loss from it. i) Fin the velocity at the exit from the nozzle. ii) If the inlet area is 0.1 m^2 and specific volume at inlet is 0.187 m^3/kg, find the mass flow rate. iii) If the specific volume at the nozzle exit is 0.498m^3/kg, find the exit area of the nozzle.	7 Marks
		(OR)	
4	a)	Establish the equivalence of Kelvin - Plank and Clausius statements of second law of thermodynamics.	7 Marks
	b)	A heat engine is used to drive a heat pump. The heat transfer from the heat engine and the heat pump are used to heat the water circulating through radiator of a building. If the COP of the heat pump is 4 and the efficiency of the heat engine is 0.3, how much heat is transferred to the radiator water for every kJ heat transferred to the heat engine?	7 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 500K receives 7200kJ/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 220ºC. 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 a) Derive the expression from the air standard efficiency of the diesel cycle in terms of compression ratio, cut off ration and adiabatic index. 7 Marks

b) Explain the working principle of Otto cycle with the help of P-V and T-S diagrams. 7 Marks

(OR)

10 a) What do you mean by air standard cycles? What are the assumptions for air standard cycles? 6 Marks

b) An air standard Otto cycle has a compression ratio of 8. At the start of the compression process, the temperature is 26^0C and the pressure is 1 bar. If the maximum temperature of the cycle is 1080^0C. Calculate 8 Marks

i) The heat supplied per kg of air.
ii) The net work done per kg of air.
iii) The air standard efficiency of the cycle.

CODE No.:14BT30401 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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) Roll a die five times. How many outcomes do we have in the sample space? Find the following probabilities: 7 Marks

i) P (E)=p (all five rolls are either a 1 or a 3).
ii) P (E)=p (all five rolls are not 2).
iii) P (E)=p (all five rolls are above 3).
iv) P (E)=p (all are a 1 or all are a 5).

b) State and prove Bayes theorem. 7 Marks

(OR)

2 a) Suppose that P(A) = 0.7 and P(B) = 0.5 and P[(A∩B)'] = 0.1. Find: 7 Marks
i) P[(A∩B)] ii) P[(A/B)] iii) P[(B/A)]

b) Define probability based on set theory and fundamental axioms. 7 Marks

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 $F_X(x) = K(1-x^3)$; $0 < x < 1$ Find the value of K and $F_X(x)$. 8 Marks

(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) Find the skew for Gaussian distributed random variable. 6 Marks

b) Explain about the monotonic transformations for a continuous random variable. 8 Marks

(OR)

6 a) Explain the physical significance of variance and standard deviation. 7 Marks

b) Find the variance of X for uniform probability density function. 7 Marks

UNIT-IV

7 a) Show that the random process $x(t)=A\cos(\omega t+\theta)$ is a wide sense stationary process if A and ω are constants and is a uniformly distributed random variable is $(0,2\pi)$. 7 Marks

b) Distinguish between 'stationary' and weakly stationary stochastic processes. Given an example to each type. Show that Poisson process is an evolutionary process. 7 Marks

(OR)

8 a) Derive the relation between cross power spectrum and cross correlation function of random processes. 7 Marks

b) Given the power spectral density of a continuous process as $S_{xx}(w) = \left(w^2 + 9\right)/(w^4 + 5w^2 + 9)$. Find the autocorrelation function and mean square value of the process. 7 Marks

UNIT-V

9 a) Obtain an expression to find noise band width of the system. 7 Marks

b) Show that a narrow-band noise process can be expressed as in-phase and quadric components of it. 7 Marks

(OR)

10 Develop a mathematical model of narrow band noise and explain its related properties. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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

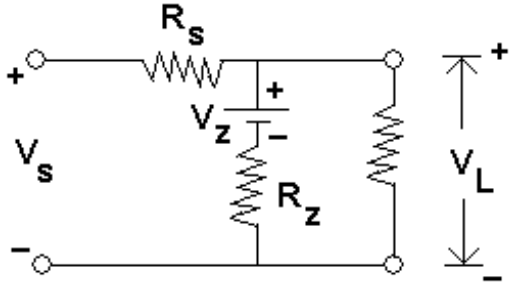
b) Distinguish between transition capacitance and diffusion capacitance of PN junction diode. 4 Marks

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 p-n 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 = 0.05Ω and V_S varies from 18 V to 20 V, R_S = 10 Ω. 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.

UNIT-II

3 a) Explain about base-width modulation with relevant waveforms. 7 Marks

b) Why transistor is considered as current control device? Explain. 7 Marks

(OR)

4 a) Explain why $\alpha < 1$ and $\beta > 1$ for a given transistor. 4 Marks

b) An npn transistor $\beta = 50$ is used in common emitter circuit with V_{CC} = 10V and R_C = 2K. The bias is obtained by connecting 100k with resistance from collector to base. Find the quiescent point and stability factor S. 5 Marks

c) Compare CB, CE, CC configurations with respect to current gain, voltage gain, input resistance and output resistance. 5 Marks

UNIT-III

5	a)	Explain the determination of h-parameters from Transistor characteristics.	4 Marks
	b)	Derive expressions for current gain, input impedance, output impedance and voltage gain of the CE configuration using hybrid parameter equivalent circuit.	10 Marks

(OR)

6	a)	Analyse the CB amplifier using approximate hybrid model.	8 Marks
	b)	Write the concept of Millers theorem and mention applications.	6 Marks

UNIT-IV

7	a)	Explain the construction and principle of operation of JFET.	8 Marks
	b)	Write the characteristics of MOSFET.	6 Marks

(OR)

8	a)	Explain the common source amplifier and derive expression for gain of the amplifier.	8 Marks
	b)	Describe the generalized FET amplifier.	6 Marks

UNIT-V

9	a)	With the schematic diagram of an UJT showing the inter-base resistances and the input diode, explain the working of it. Mention any three applications of UJT	7 Marks
	b)	Explain how tailoring of doping profiles improve the Varactor diode operation. Mention any three applications of it.	7 Marks

(OR)

10	a)	How does a Tunnel diode differ from other semiconductor diodes in its fabrication? Describe with relevant theory the energy band structure and forward-reverse characteristics of a Tunnel diode.	7 Marks
	b)	Explain the working principle of SCR with the help of V-I characteristics. Mention its applications.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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 25^0 C to 124^0 C.	7 Marks
		(OR)	
2	a)	Derive an expression for the ripple factor in a full-wave rectifier using inductor filter.	7 Marks
	b)	Determine the value of ripple factor in full-wave rectifier operating at 50Hz with a 100μF capacitor filter and 100Ω load.	7 Marks

UNIT-II

3	a)	Explain the working of a PNP transistor.	8 Marks
	b)	Compare CE, CB and CC configurations.	6 Marks
		(OR)	
4	a)	Draw the small signal hybrid model of CB amplifier and derive the expressions for its A_i, A_v, R_i, and R_o.	7 Marks
	b)	Draw the circuit and explain the characteristics of BJT (input and output characteristics) in CB configuration.	7 Marks

UNIT-III

5	a)	With neat sketch, explain the characteristics of MOSFET in enhancement mode.	7 Marks
	b)	Explain two biasing circuits for JFET.	7 Marks
		(OR)	
6	a)	Define the parameters transconductance $\mathbf{g_m}$, drain resistance $\mathbf{r_d}$ and amplification factor $\boldsymbol{\mu}$ of a JFET. Establish relation between them.	7 Marks
	b)	Explain about comparison of MOSFET and JFET.	7 Marks

UNIT-IV

7	a)	In a Hartley oscillator the value of capacitor is 0.01μF and the value of L_1 and L_2 are 0.04mH and 0.02mH respectively. Find the value of frequency and h_{fe}.	6 Marks
	b)	Draw the circuit diagram of a crystal oscillator using transistor and explain its working.	8 Marks
		(OR)	
8		Explain the following: i) Loop gain ii) Band width iii) Frequency distortion iv) Reduction in noise v) Increased stability	14 Marks

UNIT-V

9	a)	Explain the construction and working of Silicon Control Rectifier.	8 Marks
	b)	Explain uni-junction transistor as relaxation oscillator.	6 Marks
		(OR)	
10	a)	What are the applications of Silicon Control Rectifier? Explain briefly.	6 Marks
	b)	Explain the construction and working of Schottky barrier diode.	8 Marks

CODE No.:14BT30501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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? 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	Write the algorithms to implement the basic stack operations.	14 Marks
	(OR)	
4	Implement the methods Enqueue and Dequeue.	14 Marks

UNIT-III

5	Construct a binary tree with the following inorder and postorder traversals. Inorder: A F B C G E Postorder: A F C G E D B	14 Marks
	(OR)	
6	Show the result of inserting 10, 12, 11, 14, 6, 5, 8, 15, 39, 7 one at a time into an initially empty binary heap.	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	Sort the following list of numbers using quick sort. 2, 3, 1, 4, 8, 7, 6, 9.	14 Marks
	(OR)	
10	Explain common collision resolution strategies with examples.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

DIGITAL LOGIC DESIGN

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Perform the following using BCD Arithmetic. i) $1263_{10} + 9687_{10}$. ii) $7672_{10} + 3378_{10}$.	8 Marks
	b)	Convert the following: i) $997_{10} = (\ )_{16}$. ii) $257_{10} = (\ )_{8}$. iii) $654_{10} = (\ )_{2}$.	6 Marks

(OR)

2	a)	Express the following functions in sum of Minterms and product of Maxterms. i) (xy + z) (y + xz). ii) B'D + A'D + BD.	6 Marks
	b)	Obtain minimal SOP expression for the complement of the given expression: F(A,B,C) = Q(1, 2, 5, 7) and draw the circuit using NOR-gates.	8 Marks

UNIT-II

3	a)	Explain don't-care condition.	4 Marks
	b)	Implement AND, OR, NOT gates using Universal gates	6 Marks
	c)	Describe EX-OR function with an example.	4 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		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) 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

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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 dynamic response of a system and distinguish between steady state response and transient response. Also explain about various dynamic characteristics of a measurement system.	7 Marks
	b)	Derive the expressions for magnitude, phase angle, resonant frequency and resonant peak of a second order system and draw the frequency response characteristics of it.	7 Marks
		(OR)	
2	a)	Explain the classification of transducers as passive and active and also as analog and digital, with two examples per classification.	7 Marks
	b)	Explain in detail about the output characteristics which should be considered while selecting a transducer.	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)	Mention the various physical effects employed for measuring the thickness of metal foil and how does this affect the performance of transducer.	7 Marks
	b)	Explain the working of a Eddy current sensor.	7 Marks
		(OR)	
6	a)	Explain how LVDT can be used as a device to measure force.	7 Marks
	b)	Explain the working of variable reluctance sensor.	7 Marks

UNIT-IV

7	a)	Describe the construction, working, advantages and disadvantages of Thermocouples and also the methods of measurement of their output voltage.	8 Marks
	b)	Define Pyroelectric Effect with necessary equations. Explain the frequency response of pyroelectric sensors in voltage mode and current mode and draw the equivalent circuit of it.	6 Marks
		(OR)	
8	a)	Describe the different modes of operation of piezoelectric transducers. Draw the equivalent circuit of it and prove that for medium and high frequencies, magnitude of voltage across load is independent of frequency.	7 Marks
	b)	With a neat diagram, explain the principle, construction and working of Ion	7 Marks

Selective Electrodes. Also discuss its applications.

UNIT-V

9	a)	Discuss various methods used for increasing the resolution of Incremental Encoder, with necessary diagrams.	6 Marks
	b)	Explain the concept of Smart Sensors in detail with necessary block diagrams and also discuss its properties.	8 Marks

(OR)

10	a)	Define Piezo-resistive effect and explain why semiconductor strain gauges have high values of gauge factor. Also discuss temperature effects on semiconductor gauges.	8 Marks
	b)	Discuss any three applications of MEMS.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2017

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 **((P→Q)∩(Q→R)) → (P→R)** is a tautology.	7 Marks
	b)	Prove the statement "The Square of an even integer is an even integer" by the method of contradiction.	7 Marks
		(OR)	
2	a)	Show that **S∪R** is tautologically implied by **(P∪Q) ∩(P→R) ∩(Q→S)**.	7 Marks
	b)	Explain about free and bounded variables in detail in the context of predicate logic.	7 Marks

UNIT-II

3	a)	Let P = {2, 3, 6, 12, 24, 36}and $\leq$ be the relation on P such that $x \leq y$ if and only if x divides y. Draw the Hasse diagram for the poset (P, $\leq$).	7 Marks
	b)	Define Lattice and give an example.	7 Marks
		(OR)	
4	a)	Show that $f(x,y) = xy$ for $x, y \in N$ is primitive recursive.	7 Marks
	b)	Let $(L,\leq)$ be a lattice and $a,b,c \in L$. Prove that $a \oplus (b * c) \leq (a \oplus b) * (a \oplus c)$.	7 Marks

UNIT-III

5	a)	Show that the set Z of all integers is a monoid but not a group under $*$ such that $a * b = a + b - ab$.	7 Marks
	b)	Prove that identity element in a group is unique.	7 Marks
		(OR)	
6	a)	Define Homomorphism of groups with an example.	7 Marks
	b)	Prove that a Group $(G,\cdot)$ such that $(a \cdot b)^2 = a^2 \cdot b^2$ for all $a,b \in G$, is a commutative group.	7 Marks

UNIT-IV

7	a)	How many 5 digit number can be composed of the digit in the number 1 2 3 3 4 2 3 3.	7 Marks
	b)	Solve the Recurrence Relation $a_{n+2} - 2a_{n+1} + a_{n-2} = 2^n$ where $a_0 = 1$ and $a_1 = 2$ by the method of Generating function.	7 Marks
		(OR)	
8	a)	How many 6 digit numbers without repetition of digits are there such that the digits are all non zero and 1 and 2 do not appear consecutively in either order?	7 Marks
	b)	Solve the Recurrence Relation $a_{n+6} + a_{n-1} + 12a_{n-2} + 8a_{n-3} = 3^n$.	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

CODE No.: 16BT3BS01 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

PROBABILITY DISTRIBUTIONS AND STATISTICAL METHODS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define random variable, discrete probability distribution, continuous probability distribution and cumulative distribution. CO1 7 Marks

b) For the continuous random variable x whose probability density function is given by CO4 7 Marks

$$f(x) = \begin{cases} cx(2-x), & if \ \ 0 \le x < 2 \\ 0, & otherwise \end{cases}$$

Find **c**, mean, variance and standard deviation of x.

(OR)

2 a) A sample of 4 items is selected at random from a box containing 12 items of which 5 are defective. Estimate the expected number **E** of defective items. CO5 7 Marks

b) A continuous random variable x has the distribution function CO4 7 Marks

$$F(x) = \begin{cases} 0, & if \ x \le 1 \\ K(x-1)^4, & if \ \ 1 < x \le 3 \\ 1, & if \ \ x > 3 \end{cases}$$

Determine: i) the probability density function of x ii) value of K.

UNIT-II

3 a) A discrete random variable X has the mean 6 and variance 2. Using the technique of binomial distribution, find **P(5≤ X ≤ 7).** CO4, CO5 7 Marks

b) In a test on 2000 electric bulbs, it was found that the life of a particular make was normally distributed with an average life of 2040 hours and standard deviation of 60 hours. Estimate the number of bulbs likely to burn for CO4 7 Marks

i) more than 2150 hours.
ii) less than 1950 hours.
iii) more than 1920 hours and but less than 2160 hours.

(OR)

4 a) If random variable X has a Poisson distribution such that $P(1) = P(2)$ then calculate: CO4 7 Marks

i) mean of the distribution. ii) $P(X = 4)$.
iii) $P(X \ge 1)$. iv) $P(1 < X < 4)$.

b) Calculate the probabilities that among 18 engineering students, assume that 50% of all engineering students are good in mathematics, find the probability that; CO4 7 Marks

i) exactly 10. ii) at least 10. iii) at most 8.
iv) at least 2 and at most 9 are good in mathematics.

UNIT-III

5 Construct the Mean and Range charts from the following data and draw the conclusions from the results obtained CO3 14 Marks

Sample No.	1	2	3	4	5	6	7	8	9	10
Sample means(grams)	12.8	13.1	13.5	12.9	13.2	14.1	12.1	15.5	13.9	14.2
Sample range (grams)	2.1	3.1	3.9	2.1	1.9	3.0	2.5	2.8	2.5	2.0

(OR)

6 Ten competitors in a musical test were ranked by three judges A, B and C in the following order. CO3 14 Marks

Ranks by A	1	6	5	10	3	2	4	9	7	8
Ranks by B	3	5	8	4	7	10	2	1	6	9
Ranks by C	6	4	9	8	1	2	3	10	5	7

By rank correlation technique analyze which pair of judges has the nearest approach to the common liking in music.

UNIT-IV

7 a) A machine produced 20 defective articles in a batch of 400 articles. After overhauling, it produced 10 defectives in a batch of 300 articles. Analyze whether the efficiency of machine improved or not. Justify your answer. CO2 7 Marks

b) A sample of 900 members has a mean 3.5cms and standard deviation 2.61cms. Examine whether the sample drawn from a population with a mean 3.25cms and standard deviation 2.61cms or not. Justify your answer. CO2 7 Marks

(OR)

8 a) 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 in favour of the proposal are same at 5 % level. CO2, CO5 7 Marks

b) Explain briefly about: CO1 7 Marks

i) Critical region. ii) Level of significance.

iii) Degrees of freedom.

UNIT-V

9 a) A random sample of size 16 values from a normal population showed a mean of 53 and a sum of squares of deviations from the mean equals to 150. Check whether the sample is taken from the population having mean 56. Find 95% confidence limits of the mean of the population. CO4 7 Marks

b) In an examination 9 students of class A and 6 students of class B obtained the following marks. Test 0.01 level of significance whether the performance in marks is same or not for the two classes A and B. Assume that samples are drawn from normal population having same variance CO4 7 Marks

A	44	71	63	59	68	46	69	54	48
B	52	70	41	62	36	50	-	-	-

(OR)

10 Four methods are under development for making discs of a super conducting material. Fifty discs are made by each method and they are checked for super conductivity when cooled with liquid. CO4 14 Marks

	1st Method	2nd Method	3rd Method	4th Method
Super conductors	31	42	22	25
Failures	19	8	28	25

Test the significant difference between the proportions of conductors at 0.05 level.

CODE No.: 16BT3BS02 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define gamma function and using it, evaluate the value of $\Gamma\left(\frac{1}{2}\right)$. CO1. CO4 7 Marks

b) Evaluate the integral $\int_0^{\pi/2} \sqrt{\tan\theta} + \sqrt{\cot\theta}\ \ d\theta$. CO4 7 Marks

(OR)

2 a) Express $J_4(x)$ in terms of $J_0(x)$ and $J_1(x)$. CO4 7 Marks

b) Show that $J_{5/2}(x) = \sqrt{\frac{2}{\pi x}}\left[\frac{3-x^2}{x^2}\sin x - \frac{3}{x}\cos x\right]$ CO4 7 Marks

UNIT-II

3 Define continuity of $f(z)$ at origin. Check whether the function $f(z)$ defined by $f(z) = \begin{cases} \frac{x^3(1+i) - y^3(1-i)}{x^2+y^2}, (z \neq 0) \\ 0 \qquad\qquad , z = 0 \end{cases}$ is continuous at origin? Is Cauchy-Riemann equations are satisfied at the origin? Also discuss about the existence of $f'(0)$. CO1, CO4 14 Marks

(OR)

4 a) Define harmonic function and show that the real and imaginary parts of an analytic function are harmonic. CO1 7 Marks

b) Show that $\left[\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2}\right]|f(z)|^2 = 4|f'(z)|^2$, if $f(z)$ is a regular function of z. CO4 7 Marks

UNIT-III

5 a) Evaluate the value of the integral $\int_0^{1+i} (x^2 - iy)dz$ along paths CO4 7 Marks

i) $y = x$. ii) $y = x^2$.

b) Construct a series of positive and negative powers of (z – 1) for the function $f(z) = \frac{z}{(z-1)(z-3)}$. CO3 7 Marks

(OR)

6 a) Compute the integral $\int_C (x - 2y)dx + (y^2 - x^2)$ over the boundary of the first quadrant of the circle $x^2 + y^2 = 4$. CO4 7 Marks

b) Construct Laurent's series about $z = 1$ for $f(z) = \frac{e^{2z}}{(z-1)^3}$. Analyze the series and identify the region of convergence. CO2, CO3 7 Marks

UNIT-IV

7 Define the singularity of a function and give an example. Estimate the poles of $f(z) = \dfrac{z^2 - 2z}{(1+z)^2(z^2+1)}$ and find residues at these poles. CO1, CO4 14 Marks

(OR)

8 Prove that $\int_{-\infty}^{\infty} \dfrac{\cos x}{(x^2+a^2)(x^2+b^2)}\,dx = \dfrac{\pi}{a^2-b^2}\left(\dfrac{e^{-b}}{b} - \dfrac{e^{-a}}{a}\right)$, $a > b > 0$ by complex variable technique. CO5 14 Marks

UNIT-V

9 a) Applying the transformation $w = \sin z$ establish the images for: CO4 7 Marks
i) x-axis. ii) y-axis.

b) Determine the linear fractional transformation that maps $z_1 = 0$, $z_2 = 1$, $z_3 = \infty$ onto $w_1 = -1$, $w_2 = -i$, $w_3 = 1$ respectively. CO4 7 Marks

(OR)

10 a) Define a bilinear transformation and applying the transformation $w = 1/z$, find the image of the infinite strip $\dfrac{1}{4} < y < \dfrac{1}{2}$ of z - plane. CO1, CO4 7 Marks

b) Define invariant point of a bilinear transformation and hence analyze the transformation $w = \dfrac{2i - 6z}{iz - 3}$ and identify the invariant points. CO1, CO2 7 Marks

CODE No.: 16BT3HS01 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

ENVIRONMENTAL STUDIES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is an aquifer? Discuss its types.	CO5	7 Marks
	b)	What are the major causes for conflicts over water? Give solution to solve this problem.	CO4	7 Marks
		(OR)		
2	a)	How can you as an individual conserve different natural resources?	CO7	7 Marks
	b)	Explain the impact of deforestation on the environment.	CO1	7 Marks

UNIT-II

3	a)	Explain the process of ecological succession.	CO1	7 Marks
	b)	Distinguish between forest ecosystem and desert ecosystem.	CO2	7 Marks
		(OR)		
4	a)	What are the major causes of man-wildlife conflicts? Discuss the strategies that can curb the conflict.	CO3	7 Marks
	b)	What are the major threats to biodiversity and give the solution?	CO4	7 Marks

UNIT-III

5	a)	Explain the techniques used to control the water pollution.	CO5	7 Marks
	b)	List various methods to control air pollution.	CO2	7 Marks
		(OR)		
6		Discuss solid waste management in detail.	CO3	14 Marks

UNIT-IV

7		Why do we refer to Environment protection Act 1986 as an umbrella act? Discuss the major environment protection rules 1986.	CO8	14 Marks
		(OR)		
8	a)	Discuss the natural formation and impact due to ozone depletion in the stratosphere.	CO6	6 Marks
	b)	Distinguish the anthropocentric and ecocentric world view. Which worldview appeals to you more and why?	CO2	8 Marks

UNIT-V

9		Visit to a local area to document environmental aspects of a grassland.	CO9	14 Marks
		(OR)		
10		Explain the term population explosion. Enumerate its effects and discuss the variation of population among nations.	CO1	14 Marks

CODE No.: 16BT3HS02 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Evaluate utility and significance of Managerial Economics.	CO1	14 Marks
	(OR)		
2	What is demand forecasting? How is demand forecasting key for success of an enterprise?	CO3, CO4	14 Marks

UNIT-II

3	Appraise the concepts of Isoquants and Isocosts.	CO2	14 Marks
	(OR)		
4	Calculate the following from the given data: Selling Price /unit – Rs.20.00/- Variable Cost/unit – Rs.8.00/- Fixed Cost – Rs.24, 000/- i) BEP. ii) Margin of Safety for 30,000 units of sales. iii) Sales required to earn a profit of Rs.15,000/-.	CO3, CO4, CO5	14 Marks

UNIT-III

5	With a neat graph, describe price and output determination under monopolistic competition.	CO2, CO3	14 Marks
	(OR)		
6	How can you characterize perfect competition?	CO1	14 Marks

UNIT-IV

7	Define 'Trial Balance'. Explain its significance, objectives and limitations.	CO1, CO2	14 Marks
	(OR)		
8	Pass the necessary journal entries for the following transactions in the books of Raghava: 2017 Jan. 1 Raghava commenced a business with Rs. 15,00,000/-. Jan. 6 Bought goods from Harika for cash Rs. 1,04,500/-. Jan. 17 Bought goods by Suri Rs. 1,48,000/-. Jan. 21 Commission paid Rs. 3,600/-. Jan 28 Cash deposited in Bank Rs.10,000/-. Jan. 31 Salaries paid through cheque Rs.20,000/-.	CO2, CO3, CO6	14 Marks

UNIT-V

9	Discuss relative merits and demerits of computerized accounting.	CO1	14 Marks
	(OR)		

10 From the following trail balance as on September 30, 2017 prepare trading, profit and loss account for the year ended December 31, 2017 and a balance sheet as on that date: CO4, CO5, CO6 14 Marks

Particulars	Amount	Particulars	Amount
Sundry debtors	64,000	Sales	2,65,000
Opening Stock	44,000	Sundry Creditors	25,300
Cash in hand	70	Bills payable	15,000
Cash at bank	3,090	Capital	1,59,000
Plant and Machinery	35,000		
Trade Expenses	2,150		
Salaries	4,450		
Carriage outwards	800		
Rent	1,800		
Purchases	2,37,740		
Discounts	2,200		
Land and Building	69,000		
	464,300		**464,300**

Also adjust the following:

i) Stock as on December 31, 2017 amounted to Rs. 24,900/-.

ii) Rent outstanding Rs.170/-.

iii) Trade expenses yet to be paid Rs.300/-.

iv) Write off bad debts Rs. 800/-.

v) Provide 5% for doubtful debts.

vi) Depreciate Plant and Machinery @ 10% p.a.

CODE No.:16BT30101 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

CONSTRUCTION PLANNING AND PROJECT MANAGEMENT

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Distinguish between functional organization and matrix organization.	CO2	7 Marks
	b)	Prepare a flow chart representing the role of planning in different stages.	CO5	4 Marks
	c)	Mention the cases in which the workmen's compensation act of 1923 is not applicable.	CO8	3 Marks
		(OR)		
2	a)	Write a short note on choice of construction method.	CO2	7 Marks
	b)	What are the necessary precautions need to be follow for safety in the construction site?	CO6	7 Marks

UNIT-II

3	a)	Identify the various resources used for construction project.	CO1	3 Marks
	b)	Give a short note on the following: i) ABC classification of materials. ii) Establishment of labor productivity. iii) Functions of material management department.	CO1	11 Marks
		(OR)		
4	a)	Classify construction equipment.	CO2	2 Marks
	b)	Discuss the factors affecting selection of equipment.	CO7	6 Marks
	c)	Explain the factors affecting cost owning and operating the equipment.	CO8	6 Marks

UNIT-III

5	a)	Write a short note on project planning, scheduling and controlling.	CO1	8 Marks
	b)	Differentiate between bar chart and mile stone chart.	CO2	6 Marks
		(OR)		
6	a)	Write down the steps involved in the development of bar chart.	CO5	7 Marks
	b)	How do you select best method for project management among various alternatives that you have identified?	CO4	7 Marks

UNIT-IV

7	a)	Define the terms: i) Dummy activityl. ii) Activityl. iii) Event.	CO1	6 Marks
	b)	List out the various common partial situations in a network.	CO1	8 Marks
		(OR)		
8	a)	Separate out activities and events from the following list: i) Prepare budget. ii) Design completed. iii) Commence testing cubes. iv) Assemble parts of the machine. v) Showroom inaugurated.	CO2	5 Marks
	b)	Define Work Breakdown Structure and draw a typical WBS tree diagram for residence building construction.	CO3	9 Marks

UNIT-V

9	a)	Discuss in brief the resources allocation problem. What are the methods of solving the problem?	CO9	8 Marks
	b)	What do you understand by 'cost slope'? How do you determine it?	CO1	6 Marks

(OR)

10		The activities of a project are listed below. Draw the network diagram and find out the critical path and completion time of the project. Calculate EST, EFT, LST, LFT and mark in the diagram calculated total float and free float, tabulate the details.	CO2	14 Marks

Activity	**Duration in days**	**Activities immediately**	
		Preceding	**Following**
A	3	-	B,C
B	4	A	D
C	6	A	D
D	3	B,C	D,E
E	6	C	G
F	4	D	I
G	5	E	H,J
H	3	G	I
I	6	F,H	L
J	4	G	K
K	4	J	L
L	4	I,K	-

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

FLUID MECHANICS AND HYDARULIC MACHINERY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	An annular plate 2m external diameter and 1m internal diameter with its greatest and least depths below the surface being 1.5m and 0.75m respectively. Calculate the magnitude, direction and location of the force acting upon one side of the plate due to water pressure.	CO1	7 Marks
	b)	Define buoyancy and centre of buoyancy and a wooden block of width 1.25m, depth 0.75m and length 3m is floating in water. Specific weight of wood is 6.4kN/m^3, find volume of water displaced and position of centre of buoyancy.	CO2	7 Marks

(OR)

2	a)	Discuss different types of equilibrium of floating bodies and explain the determination of metacentric height suing analytical and experimental methods.	CO2	7 Marks
	b)	A log of wood 0.9m in diameter and 7.5m long is floating in river water. If the specific gravity of log is 0.7, what is the depth of the wooden log in water?	CO1	7 Marks

UNIT-II

3	a)	What are the advantages of a triangular notch over a rectangular notch? A rectangular notch has a discharge of 0.24 cumec, when head of water is 800mm. Find the length of notch. Assume coefficient of discharge is 0.6.	CO2	7 Marks
	b)	Derive an expression for discharge over a triangular notch. A broad crested weir has 0.5m of water above its crest. Find the maximum discharge over the weir. Take coefficient of discharge as 0.62. Neglect velocity of approach.	CO5	7 Marks

(OR)

4	a)	Define boundary layer thickness and explain the characteristics of boundary layer with a neat sketch.	CO1	7 Marks
	b)	Discuss different types of boundary layer thickness. The velocity distribution in the boundary layer is given by $\mathbf{u/U = y/\delta}$, where **u** is the velocity at a distance **y** from the plate and $\mathbf{u = U}$ at $\mathbf{y = \delta}$, $\boldsymbol{\delta}$ being boundary layer thickness. Find the displacement, momentum and energy thickness. Also calculate shape factor.	CO2	7 Marks

UNIT-III

5	a)	Define drag and lift. The vertical component of the landing speed of a parachute is 6m/s. Treat the parachute as an open hemisphere and determine its diameter if the total weight to be carried is 1200N. Take density of air as 1.208 kg/m^3 and coefficient of drag as 1.33.	CO2	7 Marks
	b)	A kite dimensions 0.8m x 0.8m and weighing 6N is maintained in air at an angle of 10 degrees to the horizontal. The string attached to the kite makes an angle of 45 degrees to the horizontal and at this position, the drag and lift coefficients are estimated to be 0.6 and 0.8. Determine wind speed and tension in the air. Take density of air as 1.2 kg/m^3.	CO2	7 Marks

(OR)

6	a)	Define streamlined and bluff bodies. Derive an expression for lift on cylinder.	CO1	7 Marks
	b)	Discuss Magnus effect. An aeroplane weighing 39.24kN is flying in a horizontal direction at 360km/h. The plane spans 15m and has a wing surface area of 35sq.m. If drag coefficient is 0.03 and density of air is 1.22 kg/m3, determine coefficient of lift, power required to drive the plane and theoretical value of the boundary layer circulation.	CO5	7 Marks

UNIT-IV

7	a)	Classify hydraulic jumps and explain and also discuss energy dissipation due to hydraulic jump. A hydraulic jump was found to occur in a channel at the level bed. The upstream depth and velocity are 1.5m and 12.6m/s. Estimate the height of water after the jump. Also calculate the Froude's number before and after the jump.	CO2	7 Marks
	b)	Derive the relationship between critical depth and discharge per unit width. The discharge of water through a rectangular channel of width 7m is 16 cumec when depth of flow of water is 1.2m. Calculate specific energy of the flowing water, critical depth, critical velocity and value of minimum specific energy.	CO2	7 Marks

(OR)

8	a)	A trapezoidal channel having bottom width 8m and side 1:1 carries a discharge of 80 cumecs. Find the depth conjugate to initial depth of 0.75m before the jump. Also determine the loss of energy in the jump.	CO4	7 Marks
	b)	In a wide channel, hydraulic jump occurs. During the flow the depth of flow increases from 0.5m to 3.5m. Find the velocities and Froude's numbers before and after jump and the ratio of energy dissipation.	CO3	7 Marks

UNIT-V

9	a)	Explain characteristic curves of a centrifugal pump with a neat sketch. The impeller of a centrifugal pump is 1.25m diameter and discharges 2 cumec against a head of 7.5m. The vane angle at the outlet is 145 degrees to the direction of motion. Speed of impeller is 200 r.p.m. The radial velocity of flow at outlet is 3.6m/s. Find the manometric efficiency and minimum speed to start the pump. Assume suitable data required.	CO2	7 Marks
	b)	Explain pumps in parallel and series.	CO1	7 Marks

(OR)

10	a)	Two geometrically similar pumps are running at the same speed of 1000 r.p.m. One pump has an impeller diameter of 300mm and lifts water at the rate of 0.02 cumec against a head of 15m. Determine the head and impeller diameter of the other pump to deliver half the discharge.	CO2	7 Marks
	b)	Explain Net Positive Suction Head.	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

MECHANICS OF SOLIDS

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Compound tube consist of a steel tube 130mm internal diameter and 100mm thickness and an outer brass tube 150mm internal diameter and 100mm thickness. The two tubes are of same length. The compound tube carries an axial load of 950kN. Find the stresses and the load carried by each tube and the amount it shortens. Length of each tube is 130mm. $E_s=2x10^5$ N/mm^2 and $E_b=1x10^5$ N/mm^2.	CO4	7 Marks
	b)	A rod of steel is 20m long at a temperature of 20°C. Find the free expansion of the rod when the temperature rises to 65°C. Find the temperature stress produced, i) when the expansion of the rod is prevented. ii) when the rod is permitted to expand by 5.8 mm. Take $\alpha= 12x10^{-6}$ per°C and $E=2x10^5$ N/mm^2	CO1	7 Marks

(OR)

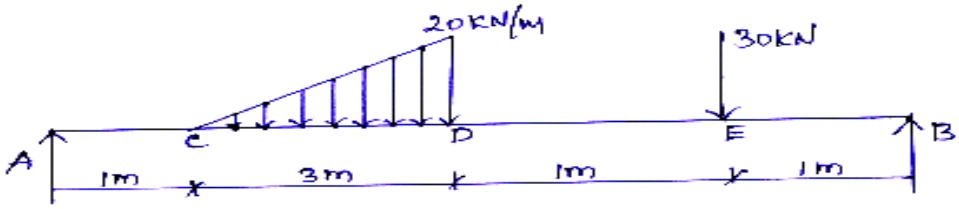
2		In a tensile test, a test piece 25mm in diameter, 250mm gauge length, stretched 0.105mm under a pull of 70kN. In a torsion test, the same rod twisted 0.015 radian over a length of 250mm, when a torque of 450Nm was applied. Find the three elastic moduli and the Poison's ratio for the material of the test piece.	CO6	14 Marks

UNIT-II

3		Determine the maximum shear force and bending moment of a cantilever beam carrying load whose intensity varies uniformly from zero at the free end to **w** per unit run at the fixed end. Draw SFD and BMD.	CO2	14 Marks

(OR)

4		Determine the maximum shear force and bending moment of a simply supported beam shown in the figure and draw SFD and BMD.	CO2	14 Marks



UNIT-III

5	a)	Two wooden planks 150mm x 50mm each are connected to form a T section of the beam. If a moment of 3.4kNm is applied around the horizontal neutral axis inducing tension below the neutral axis, find the stresses at the extreme fibres of the cross section. Also calculate the total tensile forces on the cross section	CO5	10 Marks
	b)	A cast iron cantilever of length 1.5m fails when a load of 1920N is applied at the free end. Determine the stress at failure if the section of the cantilever is of 40mm x 60mm.	CO2	4 Marks

(OR)

6		A masonry chimney 24m high, of uniform circular section, 3.5m external diameter and 2m internal diameter is subjected to a horizontal wind pressure of 1kN/m^2 of projected area. Find the maximum and minimum stress intensities at the base if the specific weight of the masonry is 22kN/m^3.	CO4	14 Marks

UNIT-IV

7	a)	A steel shaft transmits 100kW at 160 r.p.m. The shaft is 100mm in diameter, find the torque of the shaft and the maximum shearing stress induced. Find also the twist of the shaft in a length of 6m. Take C = $8x10^4$ N/mm^2	CO1	7 Marks
	b)	A solid circular shaft transmits 75kW at 200 r.p.m. Calculate the shaft diameter if the twist in the shaft is not to exceed 1° in 2m of shaft and the shearing stress in limited to 50N/mm^2. Take C = $1x10^5$ N/mm^2.	CO3	7 Marks

(OR)

8		An open coiled helical spring consist of 12 coils each of mean diameter 60mm, the wire forming the coil being 6mm in diameter. Each coil makes an angle of 30° with the plane perpendicular to the axis of spring. i) Determine the load required to elongate the spring by 25mm and the bending and the shear stress caused by the load. ii) Calculate the axial twist that would cause a bending stress of 50 MN/m^2 in the coils. Take E=200 GN/m^2 and C= 82 GN/m^2.	CO5	14 Marks

UNIT-V

9		A boiler shell is to be made of 15mm thick plate having tensile stress of 120 MN/m^2. If the efficiencies of the longitudinal and the circumferential joints are 70% and 30 % respectively. Determine: i) Maximum permissible diameter of the shell for an internal pressure of 2 MN/m^2. ii) Permissible intensity of internal pressure if the shell diameter is 1.5m.	CO1	14 Marks

(OR)

10		A thick wall closed-end cylinder is made up of an aluminum alloy (E= 72GPa, μ= 0.33), has inside diameter of 200mm and outside diameter of 800mm. The cylinder is subjected to internal fluid pressure of 150MPa. Determine the principal stresses and maximum shear stresses at a point on the inside surface of the cylinder. Also determine the increase in inside diameter due to fluid pressure.	CO4	14 Marks

CODE No.:16BT30104 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

SURVEYING

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain how you will continue chaining pass the following obstacles. i) Lake. ii) A Hill.	CO6	6 Marks
	b)	P and Q are two points 367m apart on the same bank of a river. The bearings of a tree on the other bank observed from P and Q are N36^{0}25^{1}E and N40^{0}35^{1}W respectively. Determine the width of the river if bearings of PQ are S86^{0}35^{1}E.	CO2	8 Marks

(OR)

2	a)	Enlist the obstructions in a chain survey and explain the methods to overcome them by following ethics.	CO6	6 Marks
	b)	A chain line PQ intersects a pond. Two points A and B are taken on the chain line on opposite sides of the pond. A line AC, 250m long, is set out on the left of AB and another line AD, 300 m long, is set out on the right of AB. Points C, B and D are in the same straight line. CB and BD are 100 and 150m long respectively. Calculate the length of AB.	CO3	8 Marks

UNIT-II

3		Explain the method of conducting a two point problem in the field.	CO2	14 Marks

(OR)

4	a)	Distinguish radiation method and intersection method of plane table surveying.	CO2	7 Marks
	b)	The following staff readings were observed successively with a 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 meters. Enter the above readings in a page of a level book and identify the R.L. of points if the first reading was taken with a staff held on a bench mark of 432.384m.	CO4	7 Marks

UNIT-III

5	a)	What are the methods of traversing by theodolite?	CO1	6 Marks
	b)	The following are the length and bearings of the sides of a closed traverse ABCD.	CO2	8 Marks

Side	Length (m)	Bearing
AB	76.80	140^{0}12$^{'}$
BC	195.60	36^{0}24$^{'}$
CD	37.20	338^0 48$^{'}$
DA	?	?

Compute the length and bearing of the line DA.

(OR)

6	a)	What are the possible sources of error while using a theodolite? How they can be eliminated?	CO1	7 Marks
	b)	Describe the methods of checking the accuracy of closed and open traverse.	CO1	7 Marks

UNIT-IV

7	a)	Explain the procedure to set out simple circular curve and perpendicular offsets from the tangents.	CO1	7 Marks
	b)	If the tangents to a circular curve having 500m radius intersect at an angle of 1200 and the chainage of point of intersection is 1520.5m, calculate the different elements of a simple circular curve.	CO3	7 Marks
		(OR)		
8	a)	What are the common difficulties in setting out simple curves? Describe briefly the method of employed in overcoming them.	CO1	6 Marks
	b)	A road bend deflects 750 is to be designed for a maximum speed of 80 KMPH and centrifugal ratio 1/4 and radial acceleration 0.3 m/sec3. The curve combined with two cubic spirals. Calculate the radius of the curve, the length of transition curve and the chainages of different points on the curve if the chainage of the intersection point is 4000 m.	CO3	8 Marks

UNIT-V

9	a)	Describe the function and operation of total station.	CO2	6 Marks
	b)	What are the important precautionary measures and maintenance of total station instruments?	CO5	8 Marks
		(OR)		
10	a)	Describe the method of setting out a total station at the required point in the field.	CO5	6 Marks
	b)	What are the precautions to be decided while using a total station?	CO5	8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

DC MACHINES

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Give an account of the losses which occur in a DC machine and explain how these losses vary with load and speed.	CO1	7 Marks
	b)	A long shunt dynamo running at 1000 r.p.m supplies 22kW at a terminal voltage of 220V. The resistance of armature, series field and shunt field are 0.05, 0.06 and 110 ohms respectively. The overall efficiency at the above load is 88%. Find: i) Copper losses. ii) Iron and friction losses. iii) Torque exerted by the prime mover.	CO4	7 Marks

(OR)

2	a)	Enumerate constant losses and variable losses in a DC machine. Suggest the means of minimizing these losses.	CO1	6 Marks
	b)	A shunt generator has a full load current of 195A at 250V. The stray losses are 720W and the shunt field coil resistance is 50Ω. It has a full load efficiency of 90%. Calculate the armature resistance. Also compute the current corresponding to maximum efficiency.	CO4	8 Marks

UNIT-II

3	a)	Define commutation. Give causes of sparking on the commutator and state how it can be minimized.	CO1	7 Marks
	b)	A 400V, 1000A, lap wound DC machine has 10 poles and 860 armature conductors. Calculate the number of conductors in the pole face to give full compensation if the pole face covers 70 % of pole span.	CO4	7 Marks

(OR)

4	a)	Sketch the field and armature flux distribution with GNA and MNA under no-load and on load conditions. Discuss in brief.	CO1	6 Marks
	b)	Describe the remedial measures taken to counter the effects of armature reaction.	CO1	8 Marks

UNIT-III

5	a)	Write the necessity of equalizer bars in parallel operation of DC series generators.	CO1	5 Marks
	b)	"DC cumulative generator is suitable for bulk power supply purposes". Justify.	CO5	5 Marks
	c)	List the conditions for the parallel operation of DC generators. Also write advantages of parallel operation.	CO1	4 Marks

(OR)

6	a)	Explain clearly why an equalizer connection makes it possible for two compound generators to operate in parallel in stable equilibrium.	CO1	6 Marks
	b)	A DC shunt generator has external characteristic such that the terminal voltage falls uniformly from 450V on no-load to 440V when delivering 100A. It is in parallel with a battery of 224 cells each of e.m.f 2V and internal resistance of 0.02Ω. Find how a load of 400A could be shared.	CO4	8 Marks

UNIT-IV

7	a)	Derive the torque equation of a DC motor and explain why shaft torque is less than armature torque.	CO2	7 Marks
	b)	Design the resistance sections of a seven stud starter for 36.775kW, 400V, DC shunt motor. Full load efficiency is 92%. Total copper losses are 5% of the input. Shunt field resistance is 200Ω. The lower limit of the current through the armature should be equal to the full load value.	CO3	7 Marks

(OR)

8	a)	Select and describe the suitable speed control method for DC shunt motor which is used to control the speed below rated value.	CO5	5 Marks
	b)	A 4 pole, 220V shunt motor has 540 lap wound conductors. It takes 32A from the supply mains and develops output power of 5.595kW. The field winding takes 1A. The armature resistance is 0.09Ω and the flux per pole is 30mWb. Calculate the: i) Speed. ii) Torque developed in Newton-metre.	CO4	9 Marks

UNIT-V

9	a)	Draw the circuit diagram to conduct Hopkinson's test. Explain.	CO1	7 Marks
	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 0.05Ω. Calculate the efficiency of both machines.	CO2	7 Marks

(OR)

10	a)	Explain brake test in detail with necessary equations.	CO1	7 Marks
	b)	Write the merits of Hopkinson's test.	CO1	4 Marks
	c)	"Field's test is not regenerative test". Justify.	CO1	3 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

ELECTROMAGNETIC FIELDS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the expression for electric field intensity due to an infinite sheet of charge.	CO1	7 Marks
	b)	A charge, Q = 10nC is at the origin in free space. If the x-component of electric field intensity is to be zero at the point (3, 1, 1), then what charge Q_t should be kept at the point (2, 0, 0)?	CO3	7 Marks
		(OR)		
2	a)	State and prove Gauss's law in point form.	CO1	7 Marks
	b)	Let Potential, $V = 2xy^2z^3$ and $\varepsilon = \varepsilon_0$ given the point $P(1, 2, -1)$ then, find i) Potential at P. ii) Electric field intensity at P.	CO3	7 Marks

UNIT-II

3	a)	Differentiate between conduction current and convection currents.	CO2	7 Marks
	b)	In a dielectric material, $E_x = 5\ V/m$ and $P = \frac{1}{10\pi}(3\bar{a}_x - \bar{a}_y + 4\bar{a}_z)nC/m^2$. Calculate: i) Susceptibility of the material. ii) Electric field intensity. iii) Electric flux density.	CO3	7 Marks
		(OR)		
4	a)	Differentiate between a conductor and a dielectric material.	CO1	7 Marks
	b)	Derive the boundary conditions of the normal and tangential components of electric field at the interface of two media with different dielectrics.	CO2	7 Marks

UNIT-III

5	a)	Define the following terms i) Magnetic flux. ii) Magnetic field intensity. iii) Magnetic flux density.	CO1	6 Marks
	b)	Obtain the expression for magnetic field strength in all the regions if a cylindrical conductor of radius 'R' m carrying a DC current of 'I' amperes. Also plot the variation of magnetic field strength against the distance 'r' from the centre of the conductor.	CO2	8 Marks
		(OR)		
6	a)	Using Biot-Savart's law, obtain the expression for magnetic field intensity due to circular current carrying conductor.	CO4	7 Marks
	b)	A steady current of 1000A is established in a long straight, hollow aluminum conductor of inner radius 1cm and outer radius 2cm. Assuming uniform resistivity, calculate magnetic flux density as a function of radius 'r' from the axis of the conductor.	CO3	7 Marks

UNIT-IV

7	a)	Explain the boundary conditions at the interface of two different magnetic materials.	CO1	7 Marks
	b)	Determine the force per metre length between two parallel wires A and B separated by 10cm in air and carrying currents of 20A. i) In the same direction. ii) In the opposite direction.	CO3	7 Marks

(OR)

8	a)	Define a magnetic dipole and obtain the expressions for force and torque due to a dipole.	CO1	7 Marks
	b)	What is the maximum torque on a square loop of 1000 turns in a field of uniform flux density of 10 Tesla? The loop has 10cm sides and carries a current of 3A.	CO3	7 Marks

UNIT-V

9	a)	Write four Maxwell's equations in i) Point form. ii) Integral form for time varying fields. Analyze the significance of each equation.	CO1	7 Marks
	b)	Determine the amplitude of displacement current density for the electric field given by $\overline{E} = 80\cos(6.2\pi \times 10^8 t - 2.0)\overline{a}_z \, V/m.$	CO3	7 Marks

(OR)

10		Write down Maxwell's equations in their integral form. Derive the corresponding equations for fields varying harmonically with time.	CO2	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

SIGNALS, SYSTEMS AND NETWORKS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Investigate whether the system given by $y(t) = 2t^2 x(t) + tx(t-4) + 0.5$ is CO2 7 Marks
i) Linear or Nonlinear.
ii) Time variant or Time invariant.

b) Find the even and odd components of the following signal. CO4 7 Marks
$y(t) = \sin t + 2\sin t + 2\sin^2 t \cos t$.

(OR)

2 a) Determine whether the signal $x(t) = \cos\left(\frac{\pi}{8}t\right)\sin\left(\frac{\pi}{4}t\right)$ is periodic or not. If periodic, find the fundamental frequency. CO4 7 Marks

b) Find the total response of the system given by the differential equation $\boldsymbol{y''(t) + 3y'(t) + 2y(t) = 2x(t)}$ with $\boldsymbol{y(0) = -1,\ y'(0) = 1}$ and $\boldsymbol{x(t) = u(t)\cos t}$. CO4 7 Marks

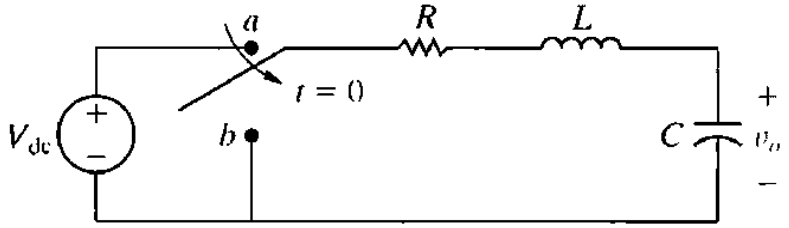
UNIT-II

3 a) Define Laplace transform of a time function x(t). Determine Laplace transforms for CO1 7 Marks
i) **δ(t)** (the impulse function).
ii) **u(t)** (the unit step function).

b) Using Laplace transforms solve for the response $y(t)$ in the following integro-differential equation $\frac{dy(t)}{dt} + 5y(t) + 6\int_0^t y(\tau)d\tau = u(t); y(0) = 2.$ CO5 7 Marks

(OR)

4 a) The switch in the circuit in figure has been in position *a* for a long time. At $t = 0$, the switch moves instantaneously to position *b*. Using Laplace transform, derive the integro-differential equation that governs the behaviour of the voltage $\boldsymbol{v_o}$ for $t > 0$. CO5 7 Marks



b) Obtain $f(t)$ for the following transform $F(s) = \frac{(s+3)e^{-6s}}{(s+1)(s+2)}$. CO4 7 Marks

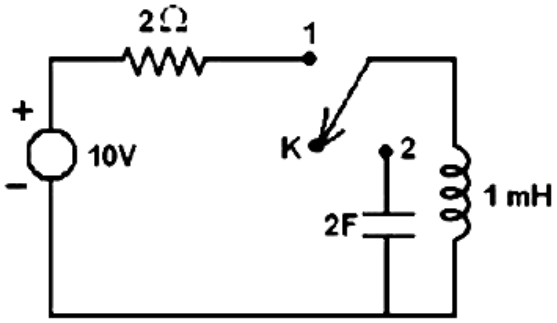
UNIT-III

5 a) What is the significance of time constant of R-C circuit? What are the different ways of defining time constant? CO1 6 Marks

b) A sinusoidal voltage of **12sin8t** volts is applied to a choke coil having R= 4Ω and L = 1H. By Laplace transform method, determine the circuit current transient. Assume zero initial condition. CO6 8 Marks

(OR)

6 a) For the circuit given in figure steady state conditions are reached for the switch K in position '1'. At t = 0, the switch is changed to position 2. Use the time domain method to determine the current through the inductor for all **t > 0**. CO4 7 Marks

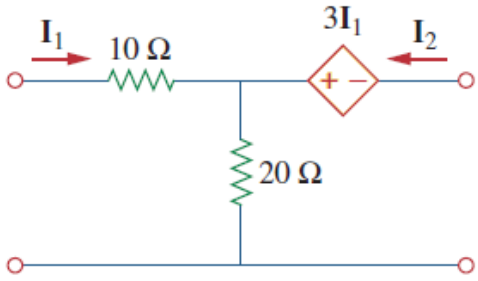


b) A series RC circuit with R = 50Ω and C = 2μF has a sinusoidal voltage source V = 150 Sin(500t + π/3) volts applied at a time t= 0. Using Laplace transforms, determine the expression for the total current. CO4 7 Marks

UNIT-IV

7 a) Obtain the relation between hybrid and impedance parameters. CO2 6 Marks

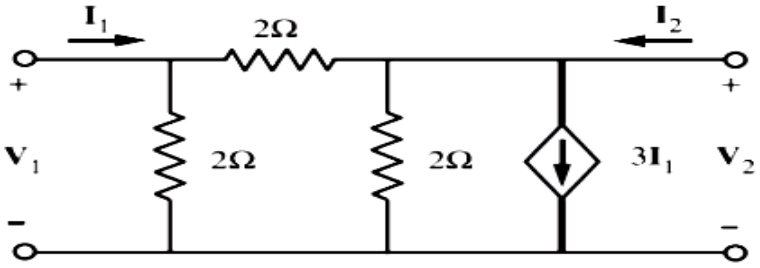
b) Find the transmission parameters for the two-port network in figure. Invistigate the netwok for symmetry and reciprocity. CO4 8 Marks



(OR)

8 a) Y-parameters for a two port network are given as Y_{11} = 0.75mhos, $Y_{12} = Y_{21} = -0.25$ mhos, $Y_{22} = 0.8$ mhos. Design an equivalent π-network. CO3 7 Marks

b) Determine the admittance parameters for the network shown in figure. Invistigate the netwok for symmetry and reciprocity. CO4 7 Marks



UNIT-V

9 a) Define characteristic impedance and derive the characteristic impedance for a filter networks. Also explain the nature of characteristic impedance in pass band and stop bands. CO1 7 Marks

b) Design a constant ***k*** low pass filter having cut off frequency of 2.5kHz and design resistance of R_0= 700Ω. Also find the frequency at which the filter produces an attenuation of 19.1db. CO3 7 Marks

(OR)

10 a) Differentiate between constant ***k*** filters and ***m*** derived filters. CO1 6 Marks

b) Design a constant ***k*** high pass filter to have a cut-off frequency of 2kHz and with design impedance (R_o) of 100 Ω. CO3 8 Marks

CODE No.: 16BT30241 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

ELECTRICAL TECHNOLOGY

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the open circuit characteristic of DC generator. Also mention the applications of DC shunt generator.	CO1	7 Marks
	b)	A 4 pole, wave-wound DC generator has 50 slots and 24 conductors / slot. The flux/pole is 10mWb. Determine the induced e.m.f in the armature, if it is rotating at 600 r.p.m.	CO4	7 Marks
		(OR)		
2	a)	Explain the characteristics of different types of DC motors. Mention their applications.	CO6	7 Marks
	b)	Explain the significance of back e.m.f of a DC motor. Derive an expression for the back e.m.f.	CO2	7 Marks

UNIT-II

3	a)	Explain the construction and principle of operation of single phase transformer.	CO1	8 Marks
	b)	Derive the e.m.f equation of a transformer.	CO2	6 Marks
		(OR)		
4	a)	Sketch and explain the phasor diagram of single phase transformer on no-load and load condition.	CO2	7 Marks
	b)	A 10 kVA, 2000/400 V single phase transformer has $R_1 = 5\ \Omega$, $X_1 = 12\ \Omega$, $R_2 = 0.2\ \Omega$, $X_2 = 0.48\ \Omega$. Develop the equivalent circuit of the transformer referred to both primary and secondary.	CO3	7 Marks

UNIT-III

5	a)	Explain the measurement of power in three phase systems using two wattmeter method and also prove that $\tan\theta = \left(\frac{\sqrt{3}(w_2 - w_1)}{w_2 + w_1}\right)$.	CO2	10 Marks
	b)	State the advantages of three phase system over single phase system.	CO1	4 Marks
		(OR)		
6	a)	Three similar coils each of resistance 20 Ω and an inductance of 0.5 H are connected in star across a three phase supply source of 400 V, 50 Hz. Calculate the line current and power absorbed by the circuit.	CO4	7 Marks
	b)	Derive the relation between phase and line quantities in three phase delta connection.	CO2	4 Marks
	c)	Explain the significance of phase sequence in three phase systems.	CO1	3 Marks

UNIT-IV

7	a)	Explain the principle of operation of three phase induction motor in detail.	CO1	10 Marks
	b)	Calculate the synchronous speed, slip and rotor frequency of a 3-phase 50Hz, 4-pole induction motor running at 1440 r.p.m.	CO4	4 Marks
		(OR)		

8	a)	Draw and discuss the torque-slip characteristics of three phase induction motor.	CO2	10 Marks
	b)	A 50 Hz, 4 pole three phase induction motor has a rotor frequency of 2 Hz. Determine slip and speed of the motor.	CO2	4 Marks

UNIT-V

9	a)	Explain the constructional features of single phase induction motor with neat sketch.	CO1	7 Marks
	b)	Illustrate the working of capacitor start and capacitor run induction motor with a phasor diagram.	CO1	7 Marks

(OR)

10	a)	List out the different types of split phase induction motor and explain any one in detail.	CO2	7 Marks
	b)	Explain the principle of operation of a single phase AC series motor with a neat sketch.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

ENGINEERING METALLURGY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1	a)	Describe the vacuum induction melting process.	CO3	7 Marks
	b)	Explain the working of puddling furnace.	CO5	7 Marks
		(OR)		
2		Discuss in detail the Bessemer converter process.	CO3	14 Marks
		UNIT-II		
3		Explain the effect of alloying elements on Iron-Iron carbon system.	CO4	14 Marks
		(OR)		
4		Define phase diagram. Explain the different types of phase diagrams in detail.	CO2	14 Marks
		UNIT-III		
5		Why heat treatment of steels done? Explain with examples.	CO3	14 Marks
		(OR)		
6	a)	Write short notes on the following: i) Full annealing. ii) Spheroidal annealing.	CO3	7 Marks
	b)	Explain about Age Hardening.	CO3	7 Marks
		UNIT-IV		
7	a)	Write about Flame Hardening.	CO3	7 Marks
	b)	Explain Induction Hardening.	CO3	7 Marks
		(OR)		
8		Explain Transmission Electron Microscope with a neat sketch.	CO5	14 Marks
		UNIT-V		
9		Discuss about the following terms: i) Atomization. ii) Blending. iii) Sintering.	CO4	14 Marks
		(OR)		
10	a)	Write the advantages and limitations of powder metallurgy.	CO6	7 Marks
	b)	Explain about mechanical alloying process in detail.	CO4	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

KINEMATICS OF MACHINERY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain different types of constrained motions with the help of neat sketches	CO1	7 Marks
	b)	Sketch and explain Whitworth quick return mechanism.	CO1	7 Marks

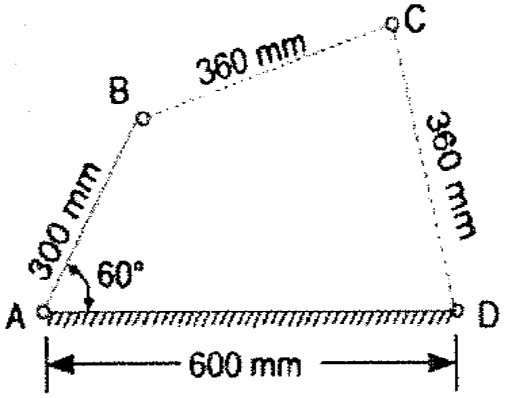
(OR)

2		Define 'Degree of Freedom'. Explain Kutzbach criterion.	CO1	14 Marks

UNIT-II

3		The crank and connecting rod of a theoretical steam engine are 0.5m and 2m long respectively. The crank makes 180 r.p.m in the clockwise direction. When it has turned 45^0 from the inner dead center position, determine: i) Velocity of piston. ii) Angular velocity of connecting rod. iii) Velocity of point E on the connecting rod 1.5m from gudgeon pin. iv) Velocities of rubbing at the pins of the crank shaft, crank and cross head when the diameters of their pins are 50mm, 60mm and 30mm respectively. v) Position and linear velocity of any point G on the connecting rod which has the least velocity relative to crank shaft.	CO2	14 Marks

(OR)

4		In a pin joined four bar mechanism as shown in figure. The crank AB rotates uniformly at 100 r.p.m. Locate all the instantaneous centers and find the angular velocity of the link BC.  	CO2	14 Marks

UNIT-III

5		Name the different mechanisms which are used for mathematically correct straight line motion. Sketch and explain the Hart's straight line motion mechanism.	CO1	14 Marks

(OR)

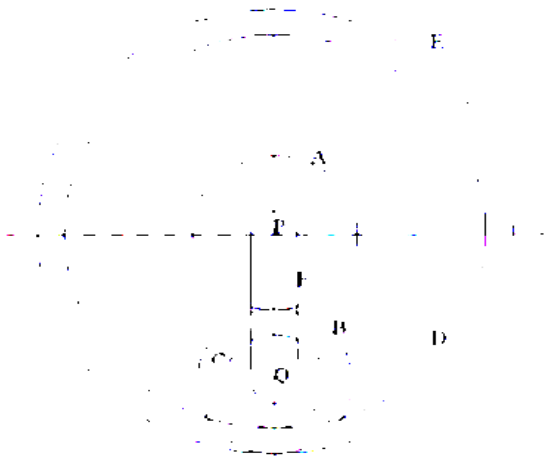
6		Prove that the ratio of the angular velocities of the driven and driving shafts is given by $\frac{\omega_2}{\omega_1} = \frac{\cos\alpha}{1 - \cos^2\theta \sin^2\alpha}$.	CO1	14 Marks

UNIT-IV

7	a)	Explain the terms: i) Module. ii) Addendum.	CO1	4 Marks
	b)	A pinion having 23 teeth drives a gear having teeth 57. The profile of the gears is involute with pressure angle 20^0, module 8mm and addendum equal to one module. Calculate following: i) Length of path of contact. ii) Length of arc of contact. iii) Contact ratio.	CO3	10 Marks

(OR)

8		A compound epi-cyclic gear train is shown in figure. The gears A, D and E are free to rotate on axis P, the compound gear B and C rotate together on the axis Q at the end of arm F. All the gears have equal pitch. The number of external teeth on gears A, B and C are 18, 45 and 21 respectively. The gears D and E are annulus gears. The gear A rotates at 100 r.p.m in anticlockwise direction and gear D rotates at 450 r.p.m clockwise. Find the speed and direction of the arm and gear E.	CO4	14 Marks



UNIT-V

9		It is required to set out the profile of a cam to give the following motion to the reciprocating follower with a knife edge: i) Follower to have a lift of 20mm during 120^0 of cam rotation. ii) Follower to dwell for 50^0 of cam rotation. iii) Follower to return to its initial position during 90^0 of cam rotation. iv) Follower to dwell for remaining period of cam rotation. The minimum radius of cam is 25mm. The outer stroke of the follower is performed with SHM and return stroke with equal uniform acceleration and retardation.	CO6	14 Marks

(OR)

10		Draw the profile of the cam operating a roller reciprocating follower and with the following data: Minimum radius of the cam = 25mm, lift = 30mm and roller diameter = 15mm. The cam lifts the follower for 120^0 with SHM followed by dwell period of 30^0. Then the follower lowers down during 150^0 of the cam rotation with uniform acceleration and retardation followed by dwell period. If the cam rotates at a uniform speed of 150 r.p.m, calculate the maximum velocity and acceleration of the follower during the descent period.	CO5	14 Marks

CODE No.: 16BT30303 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

MANUFACTURING TECHNOLOGY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Illuminate various desirable properties of moulding sand for casting. Explain briefly each one.	CO2	7 Marks
	b)	Explain different elements in a typical gating system.	CO3	7 Marks
		(OR)		
2	a)	Explain in detail the various types of pattern materials. Also mention their advantages and disadvantages.	CO2	7 Marks
	b)	Elucidate any two types of patterns in detail with neat sketches.	CO2	7 Marks

UNIT-II

3	a)	Write the merits, demerits and applications of the following castings. i) Investment casting. ii) Full mould casting. iii) Continuous casting.	CO3	7 Marks
	b)	With the help of suitable diagrams, explain the shell moulding casting process.	CO3	7 Marks
		(OR)		
4	a)	Briefly explain any three methods to test the castings.	CO4	7 Marks
	b)	Name any three metal-mould castings. Briefly explain the advantages, disadvantages and applications of any one with neat sketch.	CO4	7 Marks

UNIT-III

5	a)	Draw and explain various types of rolling mills.	CO5	7 Marks
	b)	Explain the principle of operation of drop forging and press forging processes.	CO5	7 Marks
		(OR)		
6	a)	Compare the main characteristics of the hot working and cold working.	CO4	7 Marks
	b)	Draw and explain the construction and working of explosive forming.	CO4	7 Marks

UNIT-IV

7	a)	What are the qualities of flame is used for welding? How can you distinguish three types of welding flames and for what applications these are used?	CO1	7 Marks
	b)	Briefly explain the principle of operation, advantages, limitations and applications of Laser beam welding.	CO4	7 Marks
		(OR)		
8	a)	Explain the process of thermit welding. Where would you recommend it?	CO1	7 Marks
	b)	Briefly explain the common welding defects, causes and remedies for them.	CO4	7 Marks

UNIT-V

9	a)	Elucidate the working principle of injection molding process.	CO1	7 Marks
	b)	Compare the thermo and thermosetting plastics.	CO4	7 Marks
		(OR)		
10	a)	With a neat sketch, explain the compression moulding process by its merits and demerits.	CO2	7 Marks
	b)	Write short notes on the following: i) Calendaring. ii) Casting of plastics.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

STRENGTH OF MATERIALS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw stress strain curve for mild steel and explain about the salient points.	CO6	7 Marks
	b)	A metallic bar 300mm x 100mm x 40mm is subjected to a force of 5kN (tensile), 6kN (tensile) and 4kN (tensile) along x, y and z directions respectively. Determine the change in the volume of the block. Take E = 2×10^5 N/mm^2 and Poisson's ratio = 0.25.	CO2	7 Marks

(OR)

2	a)	Find an expression for the total elongation of a bar due to its own weight, when the bar is fixed at its upper end and hanging freely at the lower end.	CO1	7 Marks
	b)	A bar of 30mm diameter is subjected to a pull of 60kN. The measured extension on a gauge length of 200mm is 0.09mm and the change in diameter is 0.0039mm. Calculate the poison's ratio and the value of elastic constants.	CO2	7 Marks

UNIT-II

3	a)	Define bending moment, shear force and point of contraflexure.	CO1	6 Marks
	b)	A Simply supported beam of length 6m carries a uniformly distributed load of 20kN/m throughout its length and a point of 30kN at 2m from the right support. Draw the shear force and bending moment diagram. Also find the position and magnitude of maximum bending moment.	CO6	8 Marks

(OR)

4	a)	List and explain different types of beams.	CO1	4 Marks
	b)	Calculate the reactions for the beam shown in Fig 1. Construct the bending moment and shear force diagrams. Determine the location of the maximum bending moment and mark it clearly on the bending moment diagram.	CO6	10 Marks

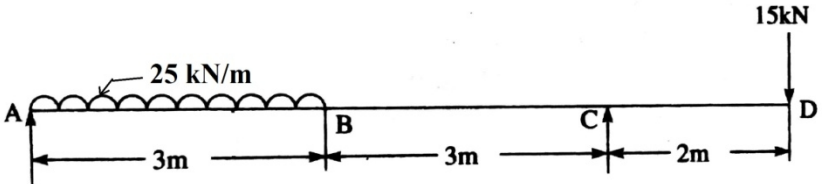

Fig.1

UNIT-III

5		A beam of T-section has a flange of 150mm x 50mm and a web of 50mm x 150mm. The beam is simply supported over a span of 4 m and carries a uniformly distributed load of 1.7kN/m run over the entire span. Determine the maximum tensile and maximum compressive stress.	CO4	14 Marks

(OR)

6	a)	State the assumptions involved in deriving the torsion equation.	CO1	4 Marks
	b)	A solid shaft transmits 250kW at 100 r.p.m. If the shear stress is not to exceed 75MPa. What should be the diameter of the shaft? If this shaft is replaced by a hollow one whose inside diameter is 0.6 times outside diameter. Determine the size and percentage saving in weight, the maximum shearing stress being the same.	CO3	10 Marks

UNIT-IV

7		A beam is 10m long and is simply supported at the ends. It carries concentrated loads of 100kN and 60kN at distances of 2m and 5m respectively from the left end. Calculate the deflection under each load. Find also the maximum deflection. Take $I = 18 \times 10^8 mm^4$ and $E = 200\ kN/mm^2$.	CO5	14 Marks

(OR)

8		A cantilever of 3m length and of uniform rectangular cross-section 150mm wide and 300mm deep is loaded with a 60kN load at its free end. In addition to this, it carries a uniformly distributed load of 30kN/m run over its entire length. Calculate; i) Maximum slope and maximum deflection. ii) Slope and deflection at 2m from free end. Take $E = 210\ GN/m^2$.	CO5	14 Marks

UNIT-V

9	a)	Determine the thickness of metal necessary for a thick cylindrical shell of internal diameter 160mm to withstand an internal pressure of $10N/mm^2$. The maximum hoop stress in the section is not to exceed $40N/mm^2$.	CO4	7 Marks
	b)	A pipe of 500mm internal diameter and 100mm thickness contains a fluid at a pressure of $6N/mm^2$. Find the maximum and minimum hoop stresses across the section. Also sketch the radial pressure distribution across this section.	CO4	7 Marks

(OR)

10	a)	Derive an expression for Hoop stress and longitudinal stress in case of thin cylinders subjected to internal fluid pressure.	CO1	7 Marks
	b)	A cylindrical shell 900mm long, 150mm internal diameter, having a thickness of metal 8mm, is filled with a fluid at atmospheric pressure. If an additional $20000mm^3$ of fluid is pumped into the cylinder, find; i) the pressure exerted by the fluid on the cylinder. ii) the hoop stress induced. Take $E = 2 \times 10^5\ N/mm^2$ and $\mu = 0.3$.	CO3	7 Marks

CODE No.: 16BT30305 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

THERMODYNAMICS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Distinguish between: i) Intensive and extensive properties ii) Homogeneous and heterogeneous systems.	CO1	7 Marks
	b)	Derive an expression for quasi-static work.	CO2	7 Marks
		(OR)		
2	a)	Prove that cyclic integral of property is always zero.	CO1	7 Marks
	b)	An engine cylinder has a piston of area $0.12m^2$ and contains gas at a pressure of 1.5MPa. The gas expands according to a process which is represented by a straight line on P-V diagram. The final pressure is 0.15MPa. Calculate the work done by the gas on the piston if stroke is 0.3m.	CO2	7 Marks

UNIT-II

3	a)	Define first law of thermodynamics and its limitations.	CO1	7 Marks
	b)	Prove that energy is a property of the system.	CO1	7 Marks
		(OR)		
4	a)	Examine the equivalence of Kelvin-Planck and Clausius statements of second law of thermodynamics.	CO2	7 Marks
	b)	A Carnot engine absorbs 200J of heat from a reservoir at the temperature of the normal boiling point of water and rejects heat to reservoir at the temperature of the triple point of water. Find the heat rejected, the work done by the engine and the thermal efficiency.	CO2	7 Marks

UNIT-III

5	a)	Explain the clausius inequality.	CO1	4 Marks
	b)	An insulated cylinder of volume capacity $4m^3$ contains 20kg of nitrogen. Paddle work is done on the gas by stirring it till the pressure in the vessel gets increased from 4 bar to 8 bar. Determine: i) Change in internal energy. ii) Work done. iii) Heat transferred. iv) Change in entropy. Take for nitrogen: C_p = 1.04kJ/kg-K and C_v = 0.7432 kJ/kg-K.	CO2	10 Marks
		(OR)		
6	a)	Explain the concepts of availability and irreversibility.	CO1	6 Marks
	b)	In a turbine the air expands from 7 bar, 600^0C to 1 bar, 250^0C. During expansion 9kJ/kg of heat is lost to surroundings which is at 1 bar, 15^0C. Neglecting kinetic and potential energy changes and determine per kg of air: i) The decrease in availability. ii) The maximum work. iii) The irreversibility. For air, take C_p = 1.005 kJ/kgK, h= C_pT where C_p is constant.	CO2	8 Marks

UNIT-IV

7	a)	Discus with neat sketch, the P-V-T surface of a pure substance.	CO1	6 Marks
	b)	A vessel of volume 0.04 contains a mixture of saturated water and saturated steam at a temperature of 250^0C. The mass of liquid present is 9 kg. Find the pressure, the mass, the specific volume, the enthalpy, the entropy and the internal energy.	CO3	8 Marks

(OR)

8	a)	Define the following terms : i) Partial pressure. ii) Mole fraction. iii) Volume fraction of a gas constituent in a mixture.	CO1	6 Marks
	b)	A mixture of ideal gases consists of 4kg of nitrogen and 6kg of CO_2 at a pressure of 4 bar and temperature of 20^0C. Find: i) Mole fraction of each constituent. ii) Equivalent molecular weight of the mixture. iii) Equivalent gas constant of the mixture. iv) Partial pressure and partial volumes. v) The C_p and C_v of mixture. vi) Volume and density of mixture. If mixture is heated at constant volume to 50^0C. Find change in internal energy, enthalpy and entropy of the mixture. γ for CO_2 = 1.286 and for N_2 = 1.4	CO4	8 Marks

UNIT-V

9	a)	Derive an expression for the thermal efficiency of otto cycle and draw P-V and T-S diagrams.	CO1	7 Marks
	b)	The swept volume of a diesel engine working on dual cycle is $0.0053m^3$ and clearance volume is $0.00035m^3$. The maximum pressure is 65 bar. Fuel injection ends at 5% of the stroke. The temperature and pressure at the start of the compression are 80°C and 0.9 bar. Determine the air standard efficiency of the cycle. Take γ for air = 1.4.	CO5	7 Marks

(OR)

10		Derive an expression for the thermal efficiency of diesel cycle and draw P-V and T-S diagrams.	CO1	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

ELECTRONIC CIRCUIT ANALYSIS AND DESIGN

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Apply Bootstrapping method for a Darlington amplifier to increase input impedance.	CO6	7 Marks
	b)	Draw the single stage CE amplifier and explain the function of each component in it.	CO1	7 Marks
		(OR)		
2	a)	Apply cascoding concept to get large voltage gain.	CO6	7 Marks
	b)	Derive expressions for current gain, voltage gain, input resistance and output resistance of Darlington amplifier.	CO3	7 Marks

UNIT-II

3	a)	Derive the expressions of Gain Bandwidth product for voltage and current.	CO3	7 Marks
	b)	Transistor has h_{ie} = 6kΩ and h_{fe} = 224 at I_c = 1mA, with f_T = 80MHz and $C_{b'c}$ = 12pF.Determine g_m, $r_{b'e}$, $r_{bb'}$ and $C_{b'e}$ at room temperature.	CO4	7 Marks
		(OR)		
4	a)	Prove that i) $h_{fe}=g_m r_{b'e}$. ii) $h_{ie}=r_{bb'}+r_{b'e}$.	CO3	7 Marks
	b)	Write short notes on multistage frequency effect.	CO1	7 Marks

UNIT-III

5	a)	Apply current series feedback concept in a CE amplifier to form Trans-conductance Amplifier	CO6	7 Marks
	b)	Select a two Stage CE amplifier circuit and explain current-shunt feedback concept.	CO5	7 Marks
		(OR)		
6	a)	A crystal oscillator has the following parameters. L = 0.33H, C_l = 0.065pF, C_h = 1.0pF and R = 5.5KΩ. Find the series resonant frequency and Q-factor of the crystal.	CO4	7 Marks
	b)	Select a RC phase shift oscillator to get low frequency sign wave and derive the expression for the frequency of oscillations.	CO5	7 Marks

UNIT-IV

7	a)	A single ended class-A power amplifier is coupled to an 8Ω load, using a transformer with a turn ratio of 5:1 with a 50V supply the transistor is biased to have a quiescent collector current of 250mA. When a sinusoidal signal is applied to the base, the collector voltage varies between a maximum of 5V and maximum of 90V. Calculate the efficiency, power output and second–harmonic distortion of this stage.	CO4	7 Marks
	b)	Compare small signal voltage amplifiers to power amplifiers	CO2	7 Marks
		(OR)		
8	a)	Explain the operation of a class-B complementary symmetry power amplifier and deduce the expression for maximum efficiency.	CO1	7 Marks
	b)	A class-B push pull power amplifier drives a load of 16Ω connected to the secondary of an ideal transformer. If the number of turns on the primary is 200 and that on the secondary is 50, calculate the maximum power output, DC power input, efficiency and maximum power dissipated per transistor if the supply voltage is 25V.	CO4	7 Marks

UNIT-V

9	a)	Compare single tuned and double tuned amplifier.	CO2	6 Marks
	b)	Explain the class-C tuned amplifier and derive its efficiency equation.	CO1	8 Marks
		(OR)		
10	a)	What are tuned amplifiers? How it is classified? Explain its operation.	CO1	7 Marks
	b)	Obtain the expression for Q-factor in case of a capacitive coupled single tuned amplifier and hence deduce the expression for gain and bandwidth in terms of effective Q-factor.	CO2	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

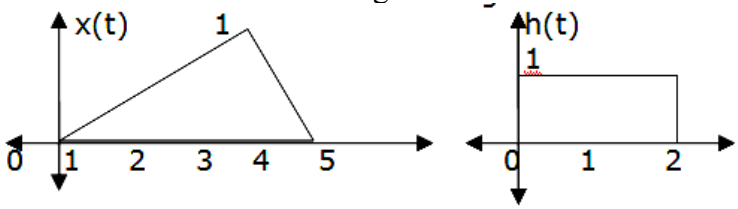
SIGNALS AND SYSTEMS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the importance of impulse signal as test signal for testing of various electronic equipments to ensure the safety and security of environment.	CO6	7 Marks
	b)	Test the whether the signal is periodic or not. If so find the fundamental period. i) $\mathbf{x(t)= e^{j10t}}$ ii) $\mathbf{x(t)= \cos(\pi/3\ t) +\sin(\pi/5\ t)}$. iii) $\mathbf{\cos(\ t + \pi/4)}$.	CO4	7 Marks
		(OR)		
2	a)	Discuss the applications of basic signals in the field of automobiles and its complications.	CO6	7 Marks
	b)	Determine the convolution of following function. 	CO4	7 Marks

UNIT-II

3	a)	Using classical method, solve the system differential equation $\mathbf{y''(t) + 4y'(t) + 4y(t) = x'(t) + x(t)}$ if the initial conditions are $\mathbf{y(0+) = 9/4}$; $\mathbf{y'(0+) = 5}$ and input signal $\mathbf{x(t) = e^{-3t}\ u(t)}$.	CO3	7 Marks
	b)	Summarize the types of distortions in linear systems. And examine how should be the amplitude of distortion less system.	CO2	7 Marks
		(OR)		
4	a)	Obtain the Fourier transform of the following functions: i) Impulse train. ii) DC Signal. iii) Cos $\omega_o t$. iv) Gaussian Pulse.	CO2	8 Marks
	b)	Using partial fraction expansion find inverse Fourier transform for the following system. $X(j\Omega) = \frac{5j\Omega + 12}{(j\Omega)^2 + 5j\Omega + 6}$.	CO3	6 Marks

UNIT-III

5	a)	Examine how autocorrelation and average power are related for a signal x(t).	CO2	6 Marks
	b)	Define the terms related to discrete LTI systems. i) Inverse system. ii) Deconvolution.	CO1	8 Marks
		(OR)		
6	a)	If a function x(t) has a power spectral density S(W), find the power spectral density of i) Integral $x(t)$. ii) Derivative of $x(t)$. iii) Bring out the relation between them.	CO2	8 Marks
	b)	State the properties of auto correlation function.	CO1	6 Marks

UNIT-IV

7	a)	Find the signal whose bilateral transform is $X(S) = \frac{1}{(S+5)(S+1)}$ $-5 < \mathrm{Re}(S) < 1$	CO4	7 Marks
	b)	Find the transfer function of an ideal differentiator.	CO5	7 Marks
		(OR)		
8	a)	Obtain the Laplace transform of a gate function and define ROC and with their conditions.	CO4	7 Marks
	b)	Explain how Laplace transform is useful to analyse the stability of systems in **S** domain.	CO6	7 Marks

UNIT-V

9	a)	Explain the following sampling techniques: i) Natural sampling. ii) Flat top sampling.	CO1	7 Marks
	b)	Explain why over sampling is restored to in certain applications. How does it help?	CO2	7 Marks
		(OR)		
10	a)	Using appropriate method, find y(n) of the Z transformed signal $Y(z) = \frac{z}{(z-1)^2}$.	CO3	7 Marks
	b)	Prove that for causal sequences ROC is in exterior of circle of some radius *r*.	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

SWITCHING THEORY AND LOGIC DESIGN

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw the logic diagram using AND/OR/NOT to realize the following expressions i) $A \oplus B \oplus C$; ii) $A \odot B \odot C$	CO6	6 Marks
	b)	Assume that the even parity hamming code is $(0100111)_2$ is transmitted and that $(0100011)_2$ is received. The receiver does not know what is transmitted. Determine the bit location where error has occurred in the code received.	CO4	8 Marks
		(OR)		
2	a)	Minimize the following Boolean expression to a minimum number of literals i) **(x'y'+z)'+z+xy+wz** to three literals. ii) **(A'+C)(A'+C')(A'+B+C'D)** to one literal.	CO3	7 Marks
	b)	Determine the complement and the dual of the function given below and then reduce it to a minimum number of literals in each case. **F = [(ab)′a] [(ab)′b]**	CO5	7 Marks

UNIT-II

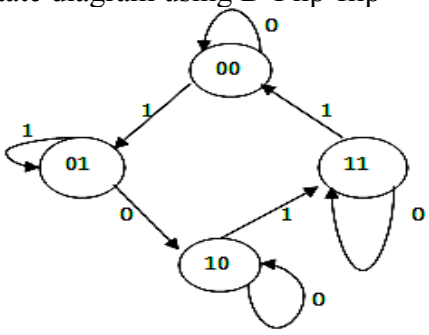
3	a)	Simplify the following function using K-map method. F (A, B, C, D) = Σm(0,1,2,3,4,10,11,12) + d (0, 3, 6, 10).	CO5	7 Marks
	b)	Minimize the following expression using K-map and realize using NOR gates. F = ∏ M (1, 2, 3, 8, 9, 10, 11, 15)	CO3	7 Marks
		(OR)		
4	a)	Simplify the following function using Tabular method. F (A, B, C, D) = Σm(0,1,2,3,4,10,11,12).	CO5	7 Marks
	b)	Minimize the following expression using K-Map Y(w,x,y,z) = ∑m(1,2,3,5,9,12,14,15)	CO3	7 Marks

UNIT-III

5	a)	Construct a 16 x 1 MUX by modifying the 4 x 16 decoder	CO6	7 Marks
	b)	Realize the function "F" using MUX. F(P,Q,R,S)=(0,1,3,4,8,9,15)	CO3	7 Marks
		(OR)		
6	a)	Draw the BCD to seven segment display decoders	CO6	8 Marks
	b)	Design a 16-line to 1-line multiplexer using 4-line to 1-line multiplexer.	CO3	6 Marks

UNIT-IV

7	a)	Explain the working of Master/Slave JK FF.	CO1	7 Marks
	b)	Reduce the following state diagram using D-Flip-flip	CO5	7 Marks



(OR)

8 a) Differentiate between Asynchronous and Synchronous Counter with neat sketches. CO1 7 Marks

b) Show that how ring counter will act as a Johnson counter. CO4 7 Marks

UNIT-V

9 a) Reduce the following sequential circuit using D-Flip-flop for the following state table1: CO2 7 Marks

Table:1

Present state	Next state		Output(Z)	
	X=1	X=0	X=1	X=0
Q1	Q2	Q1	0	0
Q2	Q3	Q1	0	0
Q3	Q4	Q5	0	0
Q4	Q4	Q1	0	0
Q5	Q2	Q1	1	0

b) Apply 2-bit binary input to PROM and generate square of the binary input. CO4 7 Marks

(OR)

10 a) Reduce the following sequential circuit using JK Flip-flop considering the following table CO2 7 Marks

Table.3

Present State		**Next State**		**output**	
		X=0	**X=1**	**X=0**	**X=1**
A	B	AB	AB	Y	Y
0	0	00	10	0	0
0	1	11	00	0	0
1	0	10	01	1	1
1	1	00	10	1	0

b) Obtain capabilities and limitations of finite state machines with aid of neat sketches. CO4 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Asses the parameters. i) $\mathbf{h_{fe} = g_m r_{b'e}}$ ii) $\mathbf{h_{ie} = r_{bb'} + r_{b'e}}$.	CO5	8 Marks
	b)	A transistor amplifier in CE configuration is operating at high frequency with the following specifications: f_T = 6 MHz, g_m= 0.04 mhos, h_{fe}= 50, r_{bb0}= 100Ω, R_s= 500Ω, C_C = 10pF, R_L= 100Ω. Compute the voltage gain, upper 3 dB cut off frequency and gain bandwidth product.	CO4	6 Marks
		OR)		
2	a)	Apply appropriate cascading technique to construct a direct coupled amplifier.	CO5	8 Marks
	b)	What transistor has h_{ie}=6kΩ and h_{fe}=224 at I_c =1mA, with f_T =80MHz and $C_{b'c}$=12pF.Determine g_m, $r_{b'e}$, $r_{bb'}$ and $C_{b'e}$ at room temperature with the use of hybrid parameters in small signal analysis.	CO4	6 Marks

UNIT-II

3	a)	Draw the RC phase shift oscillator with BJT and derive expression for frequency of oscillations.	CO3	8 Marks
	b)	Give the performance comparison of negative feedback amplifiers.	CO1	6 Marks
		(OR)		
4	a)	Derive the expression for the frequency of oscillations and the minimum gain required for sustained oscillations of RC phase shift oscillator.	CO3	6 Marks
	b)	Draw the circuit of a voltage shunt feedback circuit and explain it.	CO1	8 Marks

UNIT-III

5	a)	What are the advantages and disadvantages of a transformer coupled class-A power amplifier?	CO1	7 Marks
	b)	Select a power amplifier to get an efficiency of 25%. Explain it.	CO5	7 Marks
		(OR)		
6	a)	Select an appropriate technique to get minimum distortion in a power amplifier compromising with efficiency.	CO5	7 Marks
	b)	Explain crossover distortion in class-B power amplifier.	CO1	7 Marks

UNIT-IV

7	a)	Explain about a RC differentiator circuit and sketch the response for step input.	CO1	7 Marks
	b)	Implement different types of diode clipper with neat sketches.	CO6	7 Marks
		(OR)		
8	a)	State and prove the clamping circuit theorem.	CO1	7 Marks
	b)	Asses the parameters like tilt in the forward direction and tilt in the reverse direction. In a clamping circuit, considering the effect of source and diode resistance into account.	CO6	7 Marks

UNIT-V

9	a)	Distinguish between: i) Stable state and a Quasi- Stable state. ii) fixed-bias and self-bias bistable multi-vibrator.	CO2	7 Marks
	b)	Compute frequency and duty cycle for an astable output. If R_1 = 20KΩ, R_2 = 10KΩ and C_1 =C_2 = 0.01μF.	CO4	7 Marks

(OR)

10	a)	Apply appropriate triggering technique to a collector coupled bistable multi-vibrator.	CO5	8 Marks
	b)	List the applications of schmitt trigger.	CO2	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

COMPUTER ORGANIZATION

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Design 4-bit arithmetic circuit with one selection variable and two n-bit data inputs A and B. The circuit generates the following four arithmetic operations in conjunction with the input carry C_{in}. Draw the logic diagram for the first two stages. CO3 10 Marks

S	C_{in}	Operation
0	0	D = A + B
0	1	D = A + 1
1	0	D = A – 1
1	1	D = A + B' + 1

b) Explain in detail about the fixed-point representation of numbers. CO1 4 Marks

(OR)

2 a) Show the contents of registers E, A, Q and SC during the process of division of **10100011** by **1011**. Use a dividend of 8 bits. CO4 7 Marks

b) Design a 4-bit x 3-bit array multiplier. Draw the logic diagram and explain. CO3 7 Marks

UNIT-II

3 a) Draw the logic of micro programmed sequencer for control memory and show the truth table for input logic. CO1 7 Marks

b) Explain about data manipulation instructions. CO1 7 Marks

(OR)

4 An instruction is stored at location 300 with its address field at location 301. The address field has the value 400. A processor register R_1 contains the number 200. Evaluate the effective address if the addressing mode of the instruction is CO5 14 Marks

i) Direct. ii) Immediate.
iii) Relative. iv) Register indirect.
v) Index with R_1 as the index register.

UNIT-III

5 a) Compare the basic advantage of using Interrupt-Initiated data transfer over transfer under program control without an interrupt. CO2 7 Marks

b) Explain input-output interface modules in detail. CO1 7 Marks

(OR)

6 Discuss about various asynchronous data transfer methods in detail. CO1 14 Marks

UNIT-IV

7 a) Compare and contrast various mapping techniques of cache memory. CO2 7 Marks

b) How many 128 x 8 RAM chips are needed to provide a memory capacity of 2048 bytes? And how many lines of the address bus must be used to access 2048 bytes of memory? How many of these lines will be common to all chips? How many lines must be decoded for the line select? CO3 7 Marks

(OR)

8	a)	Design a 2M x 8 DRAM chip. Draw neat diagram of its internal organization.	CO3	7 Marks
	b)	Discuss the features of flash memory that makes it suitable for use in battery-driven portable equipment.	CO6	7 Marks

UNIT-V

9	a)	Compare the following interconnection structures to connect the memory and processors. i) Multiport memory. ii) Crossbar switch.	CO2	7 Marks
	b)	Discuss the characteristics of multiprocessors.	CO1	7 Marks
		(OR)		
10	a)	Explain system bus structure for multiprocessor with a neat diagram.	CO1	7 Marks
	b)	With a neat diagram, explain inter-processor arbitration.	CO1	7 Marks

CODE No.: 16BT30502 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

DATA STRUCTURES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Perform the following operations on the doubly linked list with example. i) Deletion of first node. ii) Deletion of a random node.	CO1	7 Marks
	b)	Solve the polynomial equation by using doubly linked list.	CO4	7 Marks
		(OR)		
2		With neat diagram, explain the following operation on the circular linked list. i) Insert an element in the beginning and at the end. ii) Deletion of random element. iii) Traverse the list.	CO1	14 Marks

UNIT-II

3		Show how to implement stack using two queues with example	CO4	14 Marks
		(OR)		
4	a)	Evaluate the following prefix expression **" ++ 26 + - 1324"**.	CO3	9 Marks
	b)	Discuss about the exceptional conditions of stack.	CO4	5 Marks

UNIT-III

5		Define BST. Explain with suitable algorithm for inserting a node at different instances. Illustrate with suitable example.	CO1	14 Marks
		(OR)		
6		Explain the three standard ways of traversing a binary tree with an iterative algorithm.	CO2	14 Marks

UNIT-IV

7	a)	Define B-trees. Construct a B-Tree of order 3 for the following set of input data: **69, 19, 43, 16, 25, 40, 132, 100, 145, 7, 15, 18**.	CO3	10 Marks
	b)	List the properties of B-Trees.	CO1	4 Marks
		(OR)		
8		Show the result of inserting the keys. **F, S, Q, K, C, L, H, T, V, W, M, R, N, P, A, B, X, Y, D, Z, E** in the order to an empty B-tree of degree-3.	CO3	14 Marks

UNIT-V

9	a)	Explain the suitable sorting algorithm to sort decimal point numbers.	CO2	7 Marks
	b)	Sort the following sequence of keys using merge sort. **66, 77, 11, 88, 99, 22, 33, 44, 55**.	CO3	7 Marks
		(OR)		
10	a)	Illustrate counting sort algorithm with an example.	CO2	7 Marks
	b)	Illustrate bucket sort algorithm with an example	CO2	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

PYTHON PROGRAMMING

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define variable, explain different variable initializations.	CO1	7 Marks
	b)	Elaborate how input can be accepted by the user and display the output on the console screen.	CO4	7 Marks
		(OR)		
2	a)	Write a short notes on: i) Implicit line joining. ii) Explicit line joining.	CO2	7 Marks
	b)	Write a python script to calculate factorial of given number.	CO5	7 Marks

UNIT-II

3		Write a python script to print fallowing pattern. 1 1 1 1 1 1 1 1 1 1 1 1	CO2	14 Marks
		(OR)		
4	a)	Outline operator precedence and Boolean expressions.	CO2	7 Marks
	b)	Explain Set data types in Python.	CO1	7 Marks

UNIT-III

5	a)	Write a program segment that opens and reads a text file and displays how many lines of text are in the file.	CO5	7 Marks
	b)	Implement Towers of Hanoi problem using Recursion.	CO3	7 Marks
		(OR)		
6		Determine how many digits a positive integer has by repeatedly dividing by 10 (without keeping the remainder) until the number is less than 10, consisting of only 1 digit. We add 1 to this value for each time we divided by 10. Here is the recursive algorithm: i) If n < 10 return 1. ii) Otherwise, return 1 + the number of digits in n/10 (ignoring the fractional part). Implement this recursive algorithm in Python and test it using a main function that calls this with the values 15, 105, and 15105. (HINT: Remember that if n is an integer, n/10 will be an integer without the fractional part.)	CO5	14 Marks

UNIT-IV

7		Explain the use of polymorphism with an example program.	CO1	14 Marks
		(OR)		
8		Explain types of Inheritance in Python with an example program.	CO4	14 Marks

UNIT-V

9	a)	List and explain the uses of Lambda.	CO2	7 Marks
	b)	Compare and contrast between radio buttons with check boxes in GUI programming of Python.	CO2	7 Marks
		(OR)		
10	a)	Write a brief note on structure of tkinter package.	CO1	7 Marks
	b)	List and explain the uses of Lambda.	CO2	7 Marks

CODE No.: 16BT31002 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

SENSORS AND TRANSDUCERS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the basic blocks of a generalized instrumentation system? With the help of a diagram explain their functions.	CO1	7 Marks
	b)	Describe how RMKS system of units is different from MKS system of units.	CO1	7 Marks
		(OR)		
2	a)	Describe the standard for construction of a 1 ohm resistance for DC.	CO6	7 Marks
	b)	Resistance standards use single layer coils. Explain their advantages over multi-layer coils.	CO1	7 Marks

UNIT-II

3		Describe how a liquid filled thermometer can be mathematically modeled as a first order system. Analyze its response through static sensitivity and time constant.	CO2	14 Marks
		(OR)		
4	a)	Define and derive expressions for the following for a second order system. i) Resonant frequency. ii) Resonant Peak. iii) Bandwidth.	CO2	7 Marks
	b)	An RC circuit consists of a capacitor of 1μF in series with a resistor of 5KΩ. A DC voltage of 50V is suddenly applied across the circuit. Calculate the value of voltage after 5ms and 25 ms.	CO3	7 Marks

UNIT-III

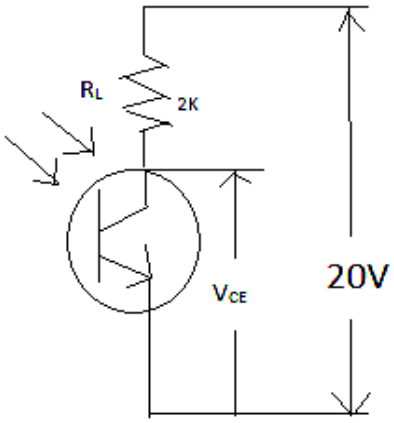
5		Describe the working of flow transducer that applies the principle of change in resistance because of flow.	CO5	14 Marks
		(OR)		
6	a)	A strain gauge has a resistance of 120Ω unstrained and the gauge factor is 12. What is the resistance value if the strain is 1%?	CO3	7 Marks
	b)	Select and brief about an appropriate transducer for the measurement of temperature that uses the principle of increase in resistance with increase in temperature.	CO4	7 Marks

UNIT-IV

7	a)	Explain the variable reluctance inductive transducers with a neat diagram.	CO1	7 Marks
	b)	An LVDT with a secondary voltage of 5V has a range of ±25mm. i) Find the output voltage when the core is −18.75mm from the centre. ii) Plot the output voltage versus core position for core movement going from +18.75mm to −10mm.	CO3	7 Marks
		(OR)		
8		Explain the different working principles of variable inductance transducers.	CO1	14 Marks

UNIT-V

9	a)	Explain the principle of operation of Photo transistor with a neat diagram.	CO1	7 Marks
	b)	The circuit of a photo-transistor is shown in figure. At an illumination level of 300W/m², find V_{CE}, V_{RL} and I_C.	CO3	7 Marks



(OR)

10		What is a Bio-Sensor? Explain the principle of operation of different types of Bio-Sensors with a neat diagram.	CO1	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

DISCRETE MATHEMATICAL STRUCTURES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Utilize truth table, verify that the proposition $(P \wedge Q) \wedge \neg (P \vee Q)$ is a contradiction.	CO3	7 Marks
	b)	Show that the following premises are inconsistent: i) If Jack misses many classes through illness, then he fails high school. ii) If Jack fails high school, then he is uneducated. iii) If Jack reads a lot of books then he is not uneducated. iv) Jack misses many classes through illness and reads a lot of book.	CO1	7 Marks

(OR)

2	a)	Examine whether the conclusion C follows logically from the premises H_1 and H_2. i) H_1: $P \rightarrow Q$, H_2 $\neg (P \wedge Q)$, C: $\neg P$ ii) H_1: $\neg P$, H_2:$P \leftrightarrow Q$, C: $\neg(P \wedge Q)$ iii) H_1: $P \rightarrow Q$, H_2: $\neg P$, C:Q iv) H_1: $\neg Q$, H_2:$P \rightarrow Q$, C: $\neg P$	CO2	7 Marks
	b)	Discuss in detail about Automatic Theorem and show that (S V R) is tautologically implied by (P V Q) Λ (P $\rightarrow$ R) Λ (Q $\rightarrow$ S).	CO5	7 Marks

UNIT-II

3	a)	Identify which elements have complements and which do not have complements if 45D denotes the set of all divisors of 45, under divisibility ordering.	CO3	7 Marks
	b)	Show that (X, $\leq$) is a chain , where **X = { 1, 2, 3, 4, 6, 12}** and $\leq$ is the usual less than or equal to relation.	CO1	7 Marks

(OR)

4	a)	Analyze compatibility relation with an example.	CO2	7 Marks
	b)	Find the maximum compatibility block in the given relation. X= {(ball, bed, dog, let, egg)} and the relation is given as R= {(x, y) / x, y $\in$ X Λ x R y if x and y contains some common letter.	CO1	7 Marks

UNIT-III

5	a)	Discuss the properties of transitive closure of a binary relation.	CO5	7 Marks
	b)	Show that $\mathbf{(xy)^{-1} = y^{-1}x^{-1}}$, where x and y are elements of group G.	CO1	7 Marks

(OR)

6	a)	Illustrate groups with examples.	CO2	7 Marks
	b)	List properties of binary relations with examples.	CO2	7 Marks

UNIT-IV

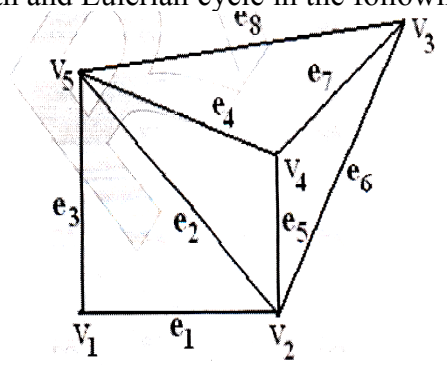
7	a)	Discuss multinomial theorem in detail.	CO5	7 Marks
	b)	Solve the recurrence relation $\mathbf{a_n = 6\ a_{n-1} - 9\ a_{n-2}}$ with initial conditions $\mathbf{a_0=4}$ and $\mathbf{a_1=6}$.	CO3	7 Marks

(OR)

8	a)	How many ways can 3 novels and 2 biographies can be arranged in a shell if There are 5 novels and 4 biographies?	CO1	7 Marks
	b)	Solve the recurrence relation $\mathbf{a_n = 3\ a_{n-1} + 2^n}$ with initial condition $\mathbf{a_0 = 2}$.	CO3	7 Marks

UNIT-V

9	a)	Show that if a plane graph is self-dual, then **E = 2 V – 2**.	CO1	7 Marks
	b)	Discuss graph coloring problem with required examples.	CO5	7 Marks
		(OR)		
10	a)	Analyze the bipartite graph with suitable examples.	CO2	7 Marks
	b)	Find an Eulerian path and Eulerian cycle in the following graph.	CO1	7 Marks



CODE No.: 16BT31501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

OPERATING SYSTEMS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List and explain different multithreading models.	CO1	7 Marks
	b)	Discuss any three threading issues that come with multithreaded programs.	CO1	7 Marks
		(OR)		
2	a)	Illustrate about IPC.	CO1	7 Marks
	b)	Explain direct and indirect communication with respect to message passing systems.	CO1	7 Marks

UNIT-II

3	a)	Describe resource allocation graph. i) With deadlock. ii) With a cycle but no deadlock.	CO3	7 Marks
	b)	Write about wait for graph? Explain how it is useful for detection of deadlock.	CO3	7 Marks
		(OR)		
4		Illustrate the purpose of Banker's algorithm with appropriate example.	CO3	14 Marks

UNIT-III

5	a)	Explain dynamic storage allocation strategies in contiguous memory allocation scheme.	CO2	7 Marks
	b)	Which page replacement algorithm may produce the minimum page faults? Justify it with an appropriate example.	CO2	7 Marks
		(OR)		
6	a)	Write about page faults and its effect on the performance of the demand paged memory system.	CO2	7 Marks
	b)	Determine the purpose of swapping. Explain with an example.	CO2	7 Marks

UNIT-IV

7	a)	Discuss about different file allocation methods.	CO1	7 Marks
	b)	Explain about disk free space management.	CO1	7 Marks
		(OR)		
8	a)	Compare the performance of SCAN and C-SCAN disk scheduling algorithms with an example.	CO1	7 Marks
	b)	Write about inodes and file descriptors.	CO1	7 Marks

UNIT-V

9	a)	Explain about DMA and Memory-mapped I/O.	CO5	7 Marks
	b)	Why is revocation of access rights easy with an access list scheme?	CO5	7 Marks
		(OR)		
10	a)	Most CPUs allow some interrupts to be ignored so that a critical instruction cannot be interrupted. Justify your view.	CO5	7 Marks
	b)	Explain the principles that dictates that programs and users be given just enough privileges to perform their tasks.	CO5	7 Marks

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CODE No.: 16BT41202 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

JAVA PROGRAMMING

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	How Java supports platform independency?	CO1	4 Marks
	b)	Develop a java program using any Three String library functions.	CO3	5 Marks
	c)	Compare and contrast overloading and overriding methods in Java.	CO2	5 Marks
		(OR)		
2	a)	Explain the this keyword and garbage collection	CO1	5 Marks
	b)	Design an application that finds the smallest of several integers. Assume that the first value read specifies the number of values to input the user.	CO3	9 Marks

UNIT-II

3	a)	Why subclass reference variables cannot refer to a super class object. Justify?	CO4	4 Marks
	b)	Design an interface queue with the following methods. i) enqueue and dequeue. ii) qfull and qempty.	CO3	10 Marks
		(OR)		
4	a)	What is a package? Create a simple package and describe its usage.	CO5	7 Marks
	b)	List types of inheritances in Java. Write each of them in detail.	CO1	7 Marks

UNIT-III

5		What are built in exceptions? Create a java program to generate and catch an Index out of Bounds Exception, and with an example prove that always finally block will execute.	CO3	14 Marks
		(OR)		
6	a)	Explain about Thread Creation in Java. What is Multi Threading?	CO1	3 Marks
	b)	What is multitasking? Is multithreading a form of multitasking?	CO1	11 Marks

UNIT-IV

7		Create an anonymous inner class for handling mouse entered event into an Applet.	CO5	14 Marks
		(OR)		
8	a)	With an example, explain how will pass parameters to an Applet.	CO4	7 Marks
	b)	Design a class to model a ball. Add a color property to the balls. Have functions to move the balls randomly.	CO6	7 Marks

UNIT-V

9		Write about Events, Event Sources and Event Classes	CO1	14 Marks
		(OR)		
10		What is a servlet? Write a servlet which retrieves the data from database.	CO1, CO3	14 Marks

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CODE No.: 16BT50502 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2018

LINUX PROGRAMMING

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail about gethostname and uname function.	CO1	7 Marks
	b)	Write a linux program which extracts some user information from password database.	CO3	7 Marks
		(OR)		
2	a)	Design a linux program which extracts host information using getuid function.	CO4	10 Marks
	b)	Compare internal and external commands.	CO2	4 Marks

UNIT-II

3	a)	Define shell and its responsibilities	CO1	4 Marks
	b)	Write shell script on prime number and Fibonacci series by using control structures	CO3	10 Marks
		(OR)		
4	a)	Write a shell script that takes a login name and reports when that person logs in.	CO3	7 Marks
	b)	Write a shell script that receives any number of file names as arguments checks if every argument supplied is a file or a directory and reports accordingly. Whenever the argument is a file, the number of lines on it is also reported.	CO6	7 Marks

UNIT-III

5	a)	Analyze the working of formatted Input and Output.	CO2	7 Marks
	b)	Illustrate briefly with example file and directory maintenance.	CO5	7 Marks
		(OR)		
6	a)	Define a file descriptor and explain it briefly with a simple program.	CO1	6 Marks
	b)	What is file permission? What are different ways of setting file permission? Explain.	CO1	8 Marks

UNIT-IV

7	a)	Analyze the need for zombie process with example.	CO2	6 Marks
	b)	Write a filter program that reads from its standard input and writes to its standard output converting into uppercase by using shell redirection.	CO4	8 Marks
		(OR)		
8	a)	Write a program that illustrates the working of signal.	CO4	7 Marks
	b)	Discuss the following commands with example: i) kill; ii) killall.	CO1	7 Marks

UNIT-V

9	a)	Illustrate how unrelated process can communicate using named pipes.	CO5	7 Marks
	b)	Explain O-RDONLY and O-WRONLY command.	CO1	7 Marks
		(OR)		
10	a)	Discuss the Client/Server application creation using FIFO.	CO1	10 Marks
	b)	Illustrate the sequence after a call to pipe and fork.	CO1	4 Marks

CODE No.:16BT3HS01 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

ENVIRONMENTAL STUDIES

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

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

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1	a)	Explain the multi-disciplinary nature of Environmental Studies.	CO1	6 Marks
	b)	Discuss about the problems over the benefits of constructing larger dams. Suggest a few remedies.	CO2	8 Marks
		(OR)		
2	a)	"Renewable energy resources are far better compared to the conventional energy resources though expensive". Justify.	CO2	7 Marks
	b)	Discuss the problems of adapting modern agricultural methods.	CO2	7 Marks
		UNIT-II		
3	a)	Write a note on functional features of an ecosystem.	CO1	7 Marks
	b)	Write a note on types of energy flow in an ecosystem.	CO2	7 Marks
		(OR)		
4	a)	What is red data book? Write about various threats to the biodiversity.	CO2	7 Marks
	b)	Why India is called a Mega Diversity Nation?	CO2	7 Marks
		UNIT-III		
5	a)	Enumerate some air pollution control equipment. Explain one with a neat sketch.	CO5	7 Marks
	b)	Give some sources of noise pollution. Discuss the affects.	CO2	7 Marks
		(OR)		
6		Write a detailed note on classification, management and disposal of solid waste.	CO4	14 Marks
		UNIT-IV		
7	a)	What is Sustainability? Explain how a nation can achieve sustainable development.	CO7	7 Marks
	b)	Discuss about acid rains with the help of a case study.	CO6	7 Marks
		(OR)		
8	a)	Explain the features of water act.	CO8	7 Marks
	b)	Why should public aware of Environment and legislation?	CO8	7 Marks
		UNIT-V		
9	a)	Explain the terms population explosion, doubling time and total fertility rate.	CO6	7 Marks
	b)	Explain the role of Information Technology in Environment and Human health.	CO7	7 Marks
		(OR)		
10	a)	Write a note on Family Welfare Programme.	CO9	6 Marks
	b)	Write a detailed note on EIA.	CO9	8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

ELECTRONIC CIRCUIT ANALYSIS AND DESIGN

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Calculate A_v, A_i, R_i, R_o of CE amplifier with emitter resistance.	CO3	7 Marks
	b)	Differentiate CE, CB and CC amplifiers.	CO4	7 Marks
		(OR)		
2	a)	Derive the expression for A_v, A_i, R_i, R_o of Darlington amplifier.	CO3	8 Marks
	b)	With neat diagram, explain the operation of CE-CB cascode configuration.	CO1	6 Marks

UNIT-II

3	a)	Derive the expression for A_v, R_i, R_o of common source amplifier at high frequencies.	CO1	8 Marks
	b)	Draw the hybrid π model and explain the capacitance $C_{b'e}$ and $C_{b'c}$.	CO2	6 Marks
		(OR)		
4	a)	Derive the expression for CE short circuit current gain.	CO3	8 Marks
	b)	A BJT has g_m = 38mhos, $r_{b'e}$ = 5.9kΩ, h_{ie} = 6kΩ, $r_{bb'}$ = 100Ω, $C_{b'e}$= 12pF, $C_{b'c}$ = 63pF and h_{fe} = 224 at 1kHz. Calculate **α** and **β** cut-off frequencies and f_T.	CO4	6 Marks

UNIT-III

5	a)	Draw the block diagram of current shunt feedback amplifier and derive the expression for input and output impedance.	CO2	8 Marks
	b)	A voltage series negative feedback amplifier has a voltage gain without feedback of A=500, input resistance R_i = 3kΩ, output resistance R_o = 20kΩ and feedback ratio β = 0.01. Calculate the voltage gain A_f, input resistance R_{if} and output resistance R_{of} of the amplifier with feedback.	CO4	6 Marks
		(OR)		
6	a)	Derive the expression for frequency of oscillations in Colpitts oscillator and conditions for oscillations with circuit diagram.	CO3	10 Marks
	b)	In the Wein-bridge oscillator if the RC network consists of resistors of 200kΩ and the capacitors of 300pF, find the frequency of oscillation.	CO4	4 Marks

UNIT-IV

7	a)	Compare series fed and transformer coupled class-A power amplifiers.	CO4	6 Marks
	b)	Analyze the working of transformer coupled class-A power amplifier and derive the equation for efficiency.	CO6	8 Marks
		(OR)		
8	a)	Explain the working of transformer coupled class-B push-pull power amplifier and derive the equation for efficiency.	CO5	10 Marks
	b)	A power amplifier supplies 3W to a load of 6Ω. The zero-signal **d.c** collectors is 55mA and the collector current with signal is 60mA.	CO6	4 Marks

UNIT-V

9	a)	Draw and explain the working of single tuned amplifier.	CO4	9 Marks
	b)	Derive the expression for bandwidth of cascaded n stages single tuned amplifiers.	CO5	5 Marks
		(OR)		
10		Write short notes on i) Stability of tuned amplifiers ii) Class-C tuned amplifier	CO2	14 Marks

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CODE No.:16BT30402 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

SIGNALS AND SYSTEMS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the basic operations on signals? Illustrate with an example.	CO1	6 Marks
	b)	Determine whether the following are energy or power signals? i) $x(t) = e^{-2t}u(t)$. ii) $x(t) = A\cos t$. iii) $r(t) = t\,u(t)$.	CO1	8 Marks
		(OR)		
2	a)	Define a system. How are systems classified? Define each one of them.	CO2	6 Marks
	b)	Find the linearity, invariance and causality of the following systems: i) $y(n) = -ax(n-1) + x(n)$. ii) $y(n) = x(n^2) + x(-n)$.	CO2	8 Marks

UNIT-II

3	a)	With regard to Fourier series representation, justify the following statements : i) Odd functions have only sine terms. ii) Even functions have no sine terms. iii) Function with half wave symmetry have only odd harmonics.	CO1	8 Marks
	b)	Prove that complex exponential functions are orthogonal functions.	CO1	6 Marks
		(OR)		
4	a)	State and prove the properties of Fourier transform.	CO1	6 Marks
	b)	Find the Fourier transform of following signals: i) $x(t) = e^{at}u(-t)$. ii) $x(t) = te^{-at}u(t)$. iii) $x(t)=\cos(\Omega_0 t)u(t)$.	CO4	8 Marks

UNIT-III

5	a)	The autocorrelation function of an a periodic power signal is $R(\tau) = e^{-\tau 2/2\sigma 2}$. Determine the PSD and the normalized average power content of the signal.	CO4	7 Marks
	b)	Determine the autocorrelation function and ESD of the following signal. $x(t) = e^{-at}u(t)$	CO1	7 Marks
		(OR)		
6	a)	State and prove time convolution theorem associated with Fourier transform.	CO1	7 Marks
	b)	Find the convolution of the two continous time signals $x(t) = e^{-\lvert t\rvert}$, for all t and $h(t) = e^{-2t}$ for $t \geq 1$ and 0 for $t < 1$.	CO1	7 Marks

UNIT-IV

7	a)	State and prove initial and final value theorems.	CO4	7 Marks
	b)	Find the inverse Laplace transform of $X(s) = 1/s(s+3)$ using integral property.	CO1	7 Marks
		(OR)		
8	a)	The input $x(t) = e^{-2t}u(t)$ is given to the system. The output response of the system to the input is $y(t) = e^{-t}u(t)$. Find the frequency response and impulse response of the system.	CO5	8 Marks
	b)	Write the properties of ROC for Laplace transforms.	CO1	6 Marks

UNIT-V

9	a)	State and prove sampling theorem for low pass signals.	CO3	7 Marks
	b)	A signal $x(t) = 2\cos 400\pi t + 6\cos \pi t$ is ideally sampled at $f_s = 500$Hz. If the sampled signal is passed through an ideal low-pass filter with a cut-off frequency of 400Hz, what frequency components will appear in the filter output?	CO5	7 Marks

(OR)

10	a)	State and prove integration and differentiation properties of Z-transform.	CO1	8 Marks
	b)	Using the appropriate properties, find the Z-transform of the signal. $x(n) = 2(3)^n u(-n)$	CO4	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

SWITCHING THEORY AND LOGIC DESIGN

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Perform the subtraction on the given unsigned binary numbers using the 2' s complement: i) 100111 – 10001. ii) 1001 – 101000.	CO4	6 Marks
	b)	The state of a 12 bit register is 100010010111. What is its contents if it represents: i) Three decimal digits in BCD. ii) Three decimal digits in the excess-3 code. iii) Three decimal digits in the 84-2-1 code. iv) A binary number.	CO1	8 Marks
		(OR)		
2	a)	Show that the dual of the exclusive-OR is equal to its complement.	CO1	6 Marks
	b)	Detect and correct the errors of even parity hamming code word i) 1101010. ii) 0101101.	CO4	8 Marks

UNIT-II

3	a)	Simplify the Boolean function using map method. $F(A,B,C,D) = A'B'CD' + B'C'D' + A'B'D' + B'CD' + A'CD + A'BD$	CO1	8 Marks
	b)	Draw a logic diagram using only two- input NOR gates to implement the function. $F(A,B,C,D) = (A'B'+AB)(C'D+CD')$	CO1	6 Marks
		(OR)		
4		Using Quine-McCluskey method simplify the Boolean function. $F(A,B,C,D,E) = \Sigma(0,1,4,5,16,17,21,25,29)$	CO1	14 Marks

UNIT-III

5	a)	Implement the following Boolean function with a multiplexer. $F(A,B,C,D) = \Sigma(0,2,5,8,10,14)$	CO3	6 Marks
	b)	Construct a 5-to-32-line decoder with four 3-to-8-line decoders with enable and a 2-to-4-line decoder.	CO4	8 Marks
		(OR)		
6	a)	Design 4 bit Magnitude Comparator and explain in detail.	CO3	8 Marks
	b)	Write the design procedure for combinational circuits.	CO2	6 Marks

UNIT-IV

7	a)	Draw the logic diagram of a SR latch using NOR gates. Explain its operation using excitation table.	CO2	6 Marks
	b)	Design a mod-10 Ripple counter using T flip-flops and explain.	CO6	8 Marks
		(OR)		
8	a)	Construct a JK flip-flop using a D flip-flop, a 2x1 multiplexer and an inverter.	CO3	8 Marks
	b)	What is race around condition? How it can be eliminated?	CO1	6 Marks

UNIT-V

9	a)	Draw a PLA circuit to implement the functions. $F_1 = A'B + AC + A'BC'$ and $F_2 = (AC + AB + BC)'$	CO3	7 Marks
	b)	Explain about sequential circuits, state table and state diagram.	CO5	7 Marks
		(OR)		
10	a)	The output Z of a fundamental mode, two input sequential circuit is to change from 0 to 1 only when x_2 changes from 0 to 1 while $x_1 = 1$. The output changes from 1 to 0 only when x_1 changes from 1 to 0 while $x_2 = 1$. Find a minimum row reduced flow table.	CO6	10 Marks
	b)	Design and implement Full adder with PLA.	CO1	4 Marks

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CODE No.:16BT40101 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

CONCRETE TECHNOLOGY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write about retarders, accelerators and plasticizers.	CO6	7 Marks
	b)	What are the different types of admixture? Write about fly ash and silica fume.	CO1	7 Marks
		(OR)		
2	a)	Write about gap graded and well graded aggregate.	CO6	7 Marks
	b)	What is bulking of sand?	CO1	7 Marks

UNIT-II

3	a)	Explain what is meant by bleeding of concrete.	CO4	7 Marks
	b)	Discuss the factors affecting bleeding of concrete.	CO4	7 Marks
		(OR)		
4	a)	Explain maturity concept of concrete. Discuss the Abrams water/cement ration law and its significance.	CO1	7 Marks
	b)	Write a brief note on manufacturing of concrete.	CO1	7 Marks

UNIT-III

5	a)	Define creep and explain how creep is measured.	CO1	7 Marks
	b)	What are the advantages of NDT over destructive tests? List out various Non-destructive testing methods.	CO5	7 Marks
		(OR)		
6	a)	Write a brief note on factors affecting modulus of elasticity.	CO1	7 Marks
	b)	Describe the mechanism of drying shrinkage of concrete.	CO1	7 Marks

UNIT-IV

7	a)	Define the term "Mix design of concrete" and list out the factors to be considered in the choice of mix proportioning.	CO2	7 Marks
	b)	Briefly discuss the procedure of mix design of concrete by Indian standard method of concrete mix design.	CO3	7 Marks
		(OR)		
8		Design a concrete mix of M20 grade for a roof slab. Take a standard deviation of 4MPa. The specific gravities of Coarse Aggregate and Fine Aggregate are 2.73 and 2.60 respectively. The bulk density of coarse aggregate is 1615kg/m^3 and fineness modulus of fine aggregate is 2.74. A slump of 55mm is necessary. The water absorption of coarse aggregate is 1% and free moisture in fine aggregate is 2%. Design the concrete mix using ACI code method. Assume any missing data suitably.	CO3	14 Marks

UNIT-V

9		Write the applications, properties and types of Fibre reinforced concrete.	CO1	14 Marks
		(OR)		
10		Write a short note on the following. i) SIFCON. ii) Self-consolidated concrete. iii) High density concrete.	CO1	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

ENGINEERING GEOLOGY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Discuss any two case histories of failures of structures due to geological draw backs.	CO1	14 Marks
		(OR)		
2		Summarize the importance of weathering with reference to dams, reservoirs and tunnels.	CO1	14 Marks

UNIT-II

3		List the physical properties of i) Feldspar. ii) Asbestos. iii) Calcite. iv) Quartz.	CO2	14 Marks
		(OR)		
4	a)	Explain the textures of igneous rocks.	CO2	8 Marks
	b)	Give the megascopic description of i) Granite. ii) Basalt. iii) Shale.	CO2	6 Marks

UNIT-III

5		What is a fault? List the types of faults with neat sketches.	CO3	14 Marks
		(OR)		
6		Lit out the geophysical methods? Explain the Seismic refraction method and its applications.	CO3	14 Marks

UNIT-IV

7	a)	Explain the geological controls of ground water movement.	CO6	7 Marks
	b)	List out the hydrological properties of rocks.	CO6	7 Marks
		(OR)		
8		Explain: i) Causes of landslides. ii) Intensity and magnitude scales.	CO4	14 Marks

UNIT-V

9		What are the geological considerations in the selection of a dam site?	CO7	14 Marks
		(OR)		
10		What is a tunnel? Explain the effects of tunneling on the ground.	CO5	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

ENGINEERING HYDROLOGY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1	a)	Explain hydrologic cycle with a neat sketch.	CO1	7 Marks
	b)	Discuss any one method for estimating the missing rainfall data.	CO1	7 Marks
		(OR)		
2	a)	Describe with a neat sketch the principle of working of a Symon's non-recording rain gauge.	CO1	7 Marks
	b)	What do you understand by dependable rainfall? How do you analyse the available data to obtain 75% dependable annual rainfall?	CO2	7 Marks
		UNIT-II		
3		Describe various methods of estimating evaporation from water bodies.	CO1	14 Marks
		(OR)		
4		A seven hour storm produced the following rainfall intensities in mm/hr at half an hour intervals over a basin of area 1830 km^2. 4, 9, 20, 18, 13, 11, 12, 2, 8, 16, 17, 13, 6 and 1 If the corresponding observed runoff is 36.6 million m^3, estimate the phi index for the storm.	CO2	14 Marks
		UNIT-III		
5		What are the various components of runoff? Explain the various factors affecting runoff.	CO1	14 Marks
		(OR)		
6	a)	Derive a formula for discharge of a well in a homogeneous unconfined aquifer assuming equilibrium conditions.	CO1	7 Marks
	b)	Explain the Area-Velocity method of stream gauging.	CO1	7 Marks
		UNIT-IV		
7	a)	Explain the components of a hydrograph with a neat sketch.	CO1	7 Marks
	b)	Given below are the ordinates of a 4h unit hydrograph of a basin in m^3/s at one hour intervals. 4, 25, 44, 60, 70, 61, 52, 45, 38, 32, 27, 22, 18, 14, 11, 8, 6, 4, 2, 1. What is the area of the basin?	CO2	7 Marks
		(OR)		
8		What do you understand by Flood Routing? Explain the method of determining Muskingum parameters **K** and **x** of a reach from a pair of observed inflow and outflow hydrographs.	CO3	14 Marks
		UNIT-V		
9		Explain various types of soil erosion and how to estimate the sheet erosion.	CO6	14 Marks
		(OR)		
10		Explain the following: i) Life of reservoir. ii) Trap efficiency. iii) Estimation of life of reservoir.	CO7	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

STRUCTURAL ANALYSIS - I

[Civil Engineering]

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

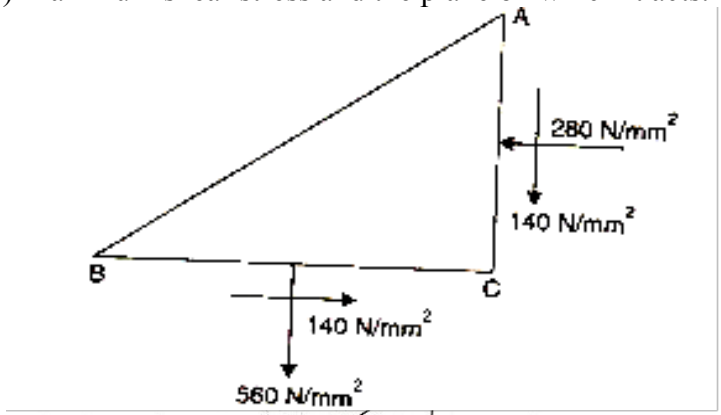
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	The normal stress in two mutually perpendicular directions are 600N/mm² and 300N/mm² both tensile. The complimentary shear stress in these directions is of intensities 450N/mm². Find the normal and tangential stresses on the two planes which are equally inclined to the plane carrying the normal stress mentioned above.	CO1	7 Marks
	b)	The stresses at a point in a bar are 200N/mm² (tensile) and 100N/mm² at a point in a bar are 200N/mm² (tensile) and 100N/mm² (compressive). Determine the resultant stress in magnitude and direction on a plane inclined at 60^0 to the axis of major stress. Also determine the maximum intensity of shear stress in the material at that point.	CO2	7 Marks

(OR)

2	a)	At a point in as trained material on plane BC there are normal and shear stresses of 560N/mm² and140N/mm² respectively. On plane AC, perpendicular to plane BC, there are normal and shear stresses of 280N/mm² and 140N/mm² respectively as shown in the figure. Determine the following: i) Principal stresses and location on which they act. ii) Maximum shear stress and the plane on which it acts.	CO2	8 Marks



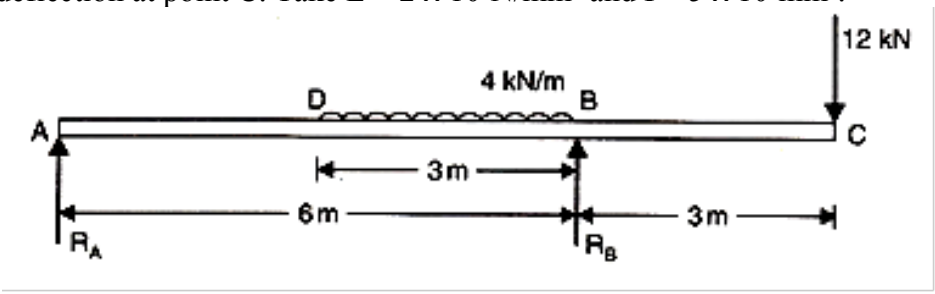
	b)	The axial stresses at a point in a bar are 100N/mm² and150N/mm² and the shear stress sis 150N/mm². Determine the maximum intensity of shear stress in the material at that point.	CO2	6 Marks

UNIT-II

3	a)	Derive the slope at supports and deflection at centre for a simply supported beam with a length of "L" carrying point load of "W" at mid span of the beam.	CO1	7 Marks
	b)	A cantilever beam 2m long having cross sectional dimensions as 120mm × 160mm carries a uniformly L is loaded with uniformly varying load of intensity zero at the free end and w/unit length at the fixed end. Derive an expression for the deflection at any point. Find also the slope and deflection of the free end.	CO2	7 Marks

(OR)

4		A beam ABC of length 9m has one support to the left end and the other support at a distance of 6m from the left end. The beam carries a point load of 12kN at the right end and carries a uniformly distributed load of 4kN/m over a length of 3m as shown in the figure. Determine slope and deflection at point C. Take E = 2 x 10^5N/mm^2 and I = 5 x 10^8mm^4.	CO4	14 Marks



UNIT-III

5	a)	What is the ratio of Euler's buckling loads of columns with the same parameters having both ends fixed and both ends hinged?	CO1	8 Marks
	b)	A pin-ended column of length L modulus of elasticity E and second moment of the cross-sectional area I is loaded centrically by a compressive load P. What is the critical buckling load (P_{cr})?	CO1	6 Marks

(OR)

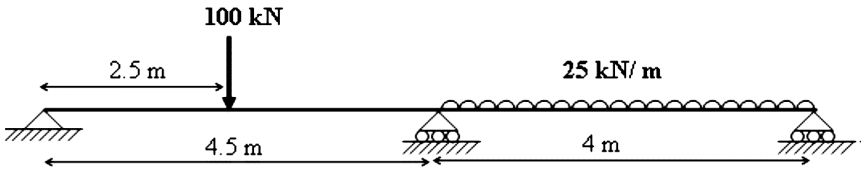
6		Euler's critical load for a column with both ends fixed is found as 50kN. What would be the change in the critical load if both ends are hinged and one end fixed and other end is hinged?	CO5	14 Marks

UNIT-IV

7		Analyze a fixed beam AB of span "L" carrying a Uniformly Distributed Load (UDL) on entire span with magnitude of "*w*". Draw the shear force and bending moment diagrams.	CO2	14 Marks

(OR)

8		Draw the bending moment and shear force diagrams of a beam shown in the figure which is simply supported at both ends and is continuous over the mid support.	CO6	14 Marks



UNIT-V

9	a)	Explain in detail about maximum shear stress theory.	CO1	7 Marks
	b)	A bolt of 18mm diameter is subjected to an axial force of 25kN. Determine the maximum shear force the bolt can sustain according to maximum principal stress and maximum shear stress theories, if the yield strength of the material is 340MPa and factor of safety is 1.8.	CO5	7 Marks

(OR)

10		A bolt is under an axial thrust of 10kN together with a transverses hear force of 4kN. Calculate the diameter of bolt according to: i) Maximum principal stress theory. ii) Maximum shear stress theory. iii) Maximum strain energy theorem. Take elastic limit in simple tension = 225N/mm^2, factor of safety = 3, μ = 0.3.	CO3	14 Marks

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CODE No.:16BT40105 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

WATER SUPPLY ENGINEERING

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain various chemical tests conducted to assess the quality of water.	CO1	7 Marks
	b)	Explain in detail about infiltration galleries and infiltration wells with a neat sketch.	CO1	7 Marks

(OR)

2	a)	Write in detail about the classification of various underground sources of water.	CO1	10 Marks
	b)	Discuss the need for protected water supplies.	CO1	4 Marks

UNIT-II

3	a)	What is meant by per capita demand and discuss the factors affecting per capita demand?	CO1	7 Marks
	b)	Estimate the population for the year 2021 and 2026 for a town, whose census data are given below by arithmetical increase method.	CO2	7 Marks

Year	1961	1971	1981	1991	2001	2011
Population	1,20,000	1,30,000	1,00,000	1,50,000	1,60,000	1,80,000

(OR)

4	a)	Explain hourly fluctuations in demand of water? What is its importance in design of water works? How do you manage these fluctuations in demand of water while designing the water supply scheme?	CO1	7 Marks
	b)	Explain the merits and demerits of various types of pipe materials.	CO1	7 Marks

UNIT-III

5	a)	Design a set of rapid gravity filter for treating water required for 50000 populations. Rate of water supply is 180lpcd. Rate of filtration is 5000lt/hr/sq.mt. Assume necessary data.	CO3	7 Marks
	b)	What is the principle of coagulation? List various types of coagulants and discuss in detail about prominent coagulant.	CO5	7 Marks

(OR)

6	a)	Explain in detail about break point chlorination.	CO7	7 Marks
	b)	Distinguish between slow sand and rapid sand filters.	CO3	7 Marks

UNIT-IV

7	a)	Write in detail about various layouts of distribution systems. Discuss the merits and demerits of each type of layouts.	CO7	7 Marks
	b)	Explain Nalgonda technique to remove excess fluoride present in water.	CO6	7 Marks

(OR)

8	a)	Discuss in detail about ion –exchange process of water softening.	CO4	7 Marks
	b)	Write a short note on types of valves.	CO6	7 Marks

UNIT-V

9		Explain with a neat sketch, as to how municipal water mains are connected to private buildings and houses for giving water supply connections.	CO5	14 Marks

(OR)

10		Briefly discuss the design principles involved in the design of water supply network to be laid in a multi storied building.	CO6	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

ELECTRICAL MEASUREMENTS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the constructional details and working of attraction type moving iron instruments with neat diagram.	CO1	7 Marks
	b)	Classify the electrical measuring instruments based on, how the deflecting torque is produced.	CO1	7 Marks

(OR)

2	a)	Discuss the various errors in PMMC instruments and suggest methods to compensate these errors.	CO1	7 Marks
	b)	Design a multi range ammeter with the ranges of 1A, 5A, 25A and 125A using individual shunts in each case. A basic meter with an internal resistance of 730Ω and full scale reading of 5mA is available.	CO3	7 Marks

UNIT-II

3	a)	With a neat circuit diagram, explain how reactive power can be measured in balanced 3-phase system using single watt meter.	CO4	7 Marks
	b)	Explain different errors in dynamometer type wattmeter.	CO4	7 Marks

(OR)

4	a)	Explain the constructional details of single phase energy meter with a neat diagram.	CO1	7 Marks
	b)	An energy meter is designed to make 100 revolutions of disc for one unit of energy. Calculate the number of revolutions made by it when connected to load carrying 40A at 230V and 0.4 power factor for an hour. If it actually makes 360 revolutions, find the percentage error.	CO4	7 Marks

UNIT-III

5		Draw the equivalent circuit and phasor diagram of a current transformer and derive the expressions for ratio and phase angle errors.	CO2	14 Marks

(OR)

6	a)	Describe in detail about the construction and working principle of three phase EDM type power factor meter.	CO1	7 Marks
	b)	A 1000/5A, 50 Hz current transformer has a bar primary and a rated secondary burden of 12.5 VA. The secondary winding has 196 turns and a leakage inductance of 0.96 mH. With a purely resistive burden at rated full load, the magnetizing m.m.f. is 16 AT and the loss excitation required is 12A. Find the ratio and phase angle errors.	CO4	7 Marks

UNIT-IV

7	a)	Describe the method of measurement of low resistance using Kelvin's double bridge.	CO1	7 Marks
	b)	The four arms of Wheatstone bridge are as follows AB=100Ω, BC=1000Ω, CD=4000Ω, DA=400Ω. The galvanometer has resistance of 100Ω, a sensitivity of 100 mm/ μA and is connected across AC. A source of 4V DC is connected across BD. Calculate the current through galvanometer and its deflection, if the resistance of arm DA is charged from 400Ω to 401Ω.	CO4	7 Marks

(OR)

8	a)	Derive the expression for unknown inductance by balancing Maxwell's bridge and draw the phasor diagram.	CO2	7 Marks
	b)	Determine the expression for unknown frequency by balancing Wein's bridge and draw the phasor diagram.	CO2	7 Marks

UNIT-V

9	a)	Explain the term standardization of a potentiometer. Describe the procedure for standardization of a DC potentiometer.	CO1	7 Marks
	b)	A slide wire potentiometer has a 6V battery with negligible internal resistance. The resistance of the slide wire is 200Ω and length of slide wire is 200cm. A standard cell of 1.018V is used for the standardizing the potentiometer and rheostat is adjusted so that the balance is obtained when the sliding contact is at 101.8cm. i) Find the working current of the slide wire and rheostat setting. ii) If the slide wire has divisions marked in mm and each division can be interpolated to one-fifth of a division, calculate resolution of instrument.	CO4	7 Marks

(OR)

10	a)	Explain the function of time base generator in a CRO.	CO1	7 Marks
	b)	Describe in detail about the integrating type digital voltmeter with neat diagram.	CO1	7 Marks

CODE No.:16BT40202 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

GENERATION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Write the types of power plant and explain hydroelectric power plant layout in detail with neat sketch and write the name of hydroelectric power plant in India.	CO1	14 Marks
		(OR)		
2		Describe the schematic arrangement of a thermal power station and explain the function of each briefly.	CO1	14 Marks

UNIT-II

3	a)	Draw the layout of nuclear power plant and explain its operation.	CO1	7 Marks
	b)	Discuss various factors which affect the selection of site for nuclear power plant.	CO5	7 Marks
		(OR)		
4		Describe the principle of operation of gas turbine power plant with a neat sketch. Discuss its advantages over a steam turbine power plant. Also give applications of their type of power plant.	CO2	14 Marks

UNIT-III

5		List different methods of major non-conventional energy sources available in India and explain where they are best suited in facing energy needs.	CO6	14 Marks
		(OR)		
6		Explain about photo-voltaic energy conversion with neat sketch. List out advantages and disadvantages of the above system.	CO6	14 Marks

UNIT-IV

7	a)	Derive a relationship between load factor and loss factor.	CO2	7 Marks
	b)	A power station has a maximum demand of 15000KW. The annual load factor is 50% and plant capacity factor is 40%. Determine the reserve capacity of plant.	CO4	7 Marks
		(OR)		
8		What is tariff? Discuss and compare various tariffs used in practice. What is two part tariff? Compare it with power factor tariff.	CO1	14 Marks

UNIT-V

9	a)	A single phase motor connected to 400V, 50 Hz supply takes 31.7A at a power factor of 0.7 lagging. Calculate the capacitance required in parallel with the motor to raise the power factor to 0.9 lagging.	CO3	7 Marks
	b)	Briefly discuss about the operating modes of co-generating systems.	CO1	7 Marks
		(OR)		
10	a)	Derive an expression for the most economic power factor.	CO2	7 Marks
	b)	Discuss about the causes of low power factor.	CO1	7 Marks

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CODE No.:16BT40203 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

TRANSFORMERS AND INDUCTION MACHINES

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Drive the EMF Equation of a 1-Φ Transformer.	CO1	6 Marks
	b)	A 1-Φ transformer has 1000 turns on the primary and 200 turns on the secondary. The no-load current is 3amp at a p.f of 0.2 lagging. Calculate the primary current and power factor, when the secondary is 280amp at a power factor of 0.8 lagging.	CO2	8 Marks

(OR)

2	a)	What are the different losses in a transformer? Derive the maximum efficiency of the transformer.	CO1	7 Marks
	b)	The maximum efficiency of a 500 KVA, 3300/500V, 50 Hz, single phase transformer is 97% at 3/4 full load, upf. If the impedance is 10%, calculate the regulation at full load, pf 0.8 lagging.	CO4	7 Marks

UNIT-II

3	a)	Explain the conditions in detail that must be fulfilled for the satisfactory parallel operation of two single phase transformers.	CO1	6 Marks
	b)	The daily variation of load on 100KVA transformer is as follows i) 8AM-1PM 65KW,35 KVAR ii) 1PM-6PM 80KW,50 KVAR iii) 6PM-1AM 30KW, 30 KVAR iv) 1AM-8AM NO LOAD. The transformer has no load core losses of 270W and full load copper losses 1200W. Determine all-day efficiency.	CO4	8 Marks

(OR)

4	a)	Show that there will be saving of copper in auto-transformer in comparison to same rating two winding transformer.	CO2	6 Marks
	b)	Two single phase transformers 11000/2200volts are connected in parallel to supply a total load of 200A at 0.8 p.f lagging at 2200volts. One transformer has an equivalent resistance of 0.4 ohms and equivalent reactance of 0.8 ohms referred to the low voltage side. The other has equivalent resistance of 0.1 ohm and a reactance of 0.3 ohms. Determine the current a power supplied by the each transformer.	CO4	8 Marks

UNIT-III

5	a)	Explain in detail about three phase transformer windings and its connections	CO1	7 Marks
	b)	A 3-phase bank consisting of three single phase transformers is used to step-down the voltages of a 3-phase, 6600 volts transmission line. If primary line current is 10 amps, calculate the secondary line voltage, line current and output KVA for the delta/star connection. The turn's ratio is 12, neglect losses.	CO4	7 Marks

(OR)

6	a)	Explain the function and principle of operation of on-load tap changing transformers.	CO1	7 Marks
	b)	Two furnaces supplied with single phase current at 50V from 3-phase 4.6KV system by means of two single phase scott-connected transformers with similar secondary windings. When load on main transformer is 350MW and that on the other is 200kW at 0.8 p.f lagging. What will be the current in each three phase line? Neglect the phase displacement and losses in transformers.	CO4	7 Marks

UNIT-IV

7	a)	Describe the concept of rotating magnetic field in the operation of 3-phase induction motor. Give suitable reason for finite starting torque in 3-phase induction motor.	CO1	7 Marks
	b)	A 10 kW, 3-phase, 50 Hz, 4 pole induction motor has a full load slip of 0.03. Mechanical and stray load losses at full load are 3.5% of output power. Compute: i) Power delivered by stator to rotor. ii) Electromagnetic torque at full load. iii) Rotor copper losses at full load.	CO4	7 Marks

(OR)

8	a)	Draw the torque-slip characteristics of 3-phase induction motor and show with suitable derivations that maximum torque is independent of rotor resistances.	CO2	6 Marks
	b)	Explain about the double cage rotor motor with torque-speed characteristics.	CO1	8 Marks

UNIT-V

9	a)	What are the various methods of speed control on stator side of a 3-phase induction motor and explain any one method in detail.	CO1	7 Marks
	b)	Explain how the equivalent circuit of a 3-phase induction motor is obtained from no load and blocked rotor tests.	CO2	7 Marks

(OR)

10	a)	Explain cascaded connection method for speed control of 3-phase induction motor.	CO2	7 Marks
	b)	Explain the principle of operation of 3-phase induction generator.	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

DESIGN OF MACHINE ELEMENTS -I

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write any two manufacturing considerations each for casting and forging.	CO1	4 Marks
	b)	Sketch the flow chart showing various phases and iterations in design process. Discuss with an example.	CO1	10 Marks
		(OR)		
2	a)	Discuss a specific case of stresses due to combined torsion and bending.	CO1	4 Marks
	b)	The stresses induced at a critical point in a machine component made of steel (S_{yt} = 350N/mm^2) are σ_x = 100N/mm^2, σ_y = 40N/mm^2. τ_{xy}=80N/mm^2. Calculate factor of safety by i) Maximum normal stress theory. ii) Maximum shear stress theory. iii) Distortion energy theory.	CO2	10 Marks

UNIT-II

3	a)	Discuss the endurance strength of a material and outline the effect of influencing parameters on endurance strength.	CO1	4 Marks
	b)	A circular bar of 400mm length is supported freely at its two ends. It is acted upon by a central concentrated cyclic load having a minimum value of 15KN and a maximum value of 40KN. Determine the diameter of the bar by taking factor of safety of 1.4, size factor of 0.85, surface finish factor of 0.8. The material properties are ultimate tensile strength = 600MPa; yield strength = 550MPa; endurance strength = 300MPA.	CO2	10 Marks
		(OR)		
4	a)	Draw and explain Soderberg and Goodman diagrams.	CO1	7 Marks
	b)	A carbon steel shaft of 60mm diameter is subjected to a fluctuating torque between 750 to 2000N-m. Using Soderberg equation, calculate the factor of safety. Take S_{ut} = 600MPa, S_{yt} = 400MPa; S_e = 0.5 S_{ut}. Assume modifying factors appropriately.	CO2	7 Marks

UNIT-III

5	a)	Discuss relative merits and demerits of a bolted joint over a welded joint.	CO1	4 Marks
	b)	Determine the size of the bolt used for an air compressor cylinder of effective diameter of 250mm. The pressure developed is 1.5 MPa. The cylinder head is connected by means of 8 bolts which are tightened with an initial pre-load of 1.5 times that of internal force. A copper gasket is used to make the joint leak proof. Take gasket factor as 2.5 and yield tensile stress of 350MPa. Factor of safety 2.0.	CO2	10 Marks
		(OR)		
6	a)	Draw a double transverse and parallel fillet weld. Name the failure stresses.	CO1	7 Marks
	b)	A plate 200mm wide and 12mm thick is to be welded to another plate by means of double parallel fillets. The plates are loaded with 100KN. Find the length of the weld if the permissible shear stress does not exceed 60MPa.	CO4	7 Marks

UNIT-IV

7	a)	Discuss about rigidity of a power transmission shaft.	CO1	4 Marks
	b)	A horizontal nickel steel shaft is supported by two bearings, A at the left and B at the right end. It carries two gears C and D located at distance of 250mm and 400mm respectively from the centre line of left and right bearings. The pitch diameter of gear C is 600mm and that of gear D is 200mm. The distance between the center lines of bearings is 2000mm, the shaft transmits 20KW at 150 r.p.m. The tooth loads act vertically downwards. Find the diameter of the shaft, if the working stress in shear is 60MPa. Shock factors are 1.5 and 2.0 for bending and shear respectively.	CO3	10 Marks

(OR)

8	a)	Discuss how a key may fail and establish the design equations.	CO1	4 Marks
	b)	Design a bushed pin type flexible coupling for connecting a motor shaft to a pump shaft for the following service conditions. Power = 40KW; Speed = 1000 r.p.m; Motor shaft diameter = 50mm; Diameter of pump shaft = 45mm; Bearing pressure = 0.5MPa; Shear stress for pin = 25MPa.	CO5	10 Marks

UNIT-V

9		Draw and furnish proportions for a Gib and Cotter joint.	CO1	14 Marks

(OR)

10		It is required to design a Knuckle joint to connect two circular rods subjected to an axial tensile force of 60KN. The rods are co-axial. Design the joint and specify the dimensions of the components. The material design stresses are 80 N/mm^2, 100 N/mm^2 and 40 N/mm^2 in tension, compression and shear respectively.	CO3	14 Marks

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II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

DYNAMICS OF MACHINERY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly explain the working of a single plate clutch with neat diagram.	CO1	4 Marks
	b)	A cone clutch is to transmit 7.5 kW at 900 r.p.m. The cone has a face angle of 12°. The width of the face is half of the mean radius and the normal pressure between the contact faces is not to exceed 0.09 N/mm^2. Assuming uniform wear and the coefficient of friction between contact faces as 0.2, find the main dimensions of the clutch and the axial force required to engage the clutch.	CO3	10 Marks

(OR)

2	a)	Explain the working of Belt transmission dynamometer with neat sketch and derive the expression for brake power.	CO1	6 Marks
	b)	A simple band brake is operated by a lever of length 500mm. The brake drum has a diameter of 500mm and the brake band embraces 5/8 of the circumference. One end of the band is attached to the fulcrum of the lever while the other end is attached to a pin on the lever 100mm from the fulcrum. If the effort applied to the end of the lever is 2kN and the coefficient of friction is 0.25, find the maximum braking torque on the drum.	CO2	8 Marks

UNIT-II

3	a)	Derive the expression for gyroscopic couple with neat sketch.	CO2	4 Marks
	b)	The turbine rotor of a ship has a mass of 2000 kg and rotates at a speed of 3000 r.p.m. clockwise when looking from a stern. The radius of gyration of the rotor is 0.5m. Determine the gyroscopic couple and its effects upon the ship when the ship is steering to the right in a curve of 100m radius at a speed of 16.1 knots (1 knot = 1855 m/hr). Calculate also the torque and its effects when the ship is pitching in simple harmonic motion, the bow falling with its maximum velocity. The period of pitching is 50 seconds and the total angular displacement between the two extreme positions of pitching is 12°. Find the maximum acceleration during pitching motion.	CO2	10 Marks

(OR)

4	a)	Discuss the difference between flywheel and governor.	CO1	4 Marks
	b)	The turning moment diagram of a four stroke engine may be assumed for the sake of simplicity to be represented by four triangles in each stroke. The areas of these triangles are as follows: Suction stroke = 5×10^{-5} m^2; Compression stroke = 21×10^{-5} m^2; Expansion stroke = 85×10^{-5} m^2; Exhaust stroke = 8×10^{-5} m^2. All the areas excepting expression stroke are negative. Each m^2 of area represents 14 MN-m of work. Assuming the resisting torque to be constant, determine the moment of inertia of the flywheel to keep the speed between 98 r.p.m. and 102 r.p.m. Also find the size of a rim-type flywheel based on the minimum material criterion, given that density of flywheel material is 8150kg/m^3 ; the allowable tensile stress of the flywheel material is 7.5MPa. The rim cross-section is rectangular, one side being four times the length of the other.	CO3	10 Marks

UNIT-III

5	a)	Briefly discuss about the Isochronism and Hunting of a governor.	CO1	4 Marks
	b)	A loaded Porter governor has four links each 250mm long, two revolving masses each of 3kg and a central dead weight of mass 20kg. All the links are attached to respective sleeves at radial distances of 40mm from the axis of rotation. The masses revolve at a radius of 150mm at minimum speed and at a radius of 200 mm at maximum speed. Determine the range of speed.	CO2	10 Marks

(OR)

6	a)	Derive the expression for mean speed of a watt governor and state its limitations.	CO2	4 Marks
	b)	In a spring loaded governor of the Hartnell type, the mass of each ball is 1kg, length of vertical arm of the bell crank lever is 100mm and that of the horizontal arm is 50mm. The distance of fulcrum of each bell crank lever is 80mm from the axis of rotation of the governor. The extreme radii of rotation of the balls are 75mm and 112.5mm. The maximum equilibrium speed is 5% greater than the minimum equilibrium speed which is 360 r.p.m. Find, neglecting obliquity of arms, initial compression of the spring and equilibrium speed corresponding to the radius of rotation of 100mm.	CO2	10 Marks

UNIT-IV

7	a)	Derive the expression for resultant balancing mass when several masses are rotating in the same plane.	CO2	4 Marks
	b)	A shaft carries four masses in parallel planes A, B, C and D in this order along its length. The masses at B and C are 18 kg and 12.5 kg respectively, and each has an eccentricity of 60mm. The masses at A and D have an eccentricity of 80mm. The angle between the masses at B and C is 100° and that between the masses at B and A is 190°, both being measured in the same direction. The axial distance between the planes A and B is 100mm and that between B and C is 200mm. If the shaft is in complete dynamic balance, determine: i) the magnitude of the masses at A and D. ii) the distance between planes A and D. iii) the angular position of the mass at D.	CO4	10 Marks

(OR)

8	a)	Derive the expression for swaying couple induced due the partial balancing of two cylinder locomotives.	CO2	6 Marks
	b)	A four cylinder vertical engine has cranks 150mm long. The planes of rotation of the first, second and fourth cranks are 400mm, 200mm and 200mm respectively from the third crank and their reciprocating masses are 50 kg, 60 kg and 50 kg respectively. Find the mass of the reciprocating parts for the third cylinder and the relative angular positions of the cranks in order that the engine may be in complete primary balance.	CO4	8 Marks

UNIT-V

9	a)	Derive the expression for natural frequency of free longitudinal vibrations using equilibrium method.	CO2	4 Marks
	b)	The mass of a single degree damped vibrating system is 7.5 kg and makes 24 free oscillations in 14 seconds when disturbed from its equilibrium position. The amplitude of vibration reduces to 0.25 of its initial value after five oscillations. Determine: (i). stiffness of the spring, (ii) logarithmic decrement, (iii) damping factor, i.e. the ratio of the system damping to critical damping.	CO5	10 Marks

(OR)

10	a)	Drive the expression to locate the node of a two rotor system for free torsional vibrations.	CO2	6 Marks
	b)	A shaft 1.5m long supported in flexible bearings at the ends carries two wheels each of 50 kg mass. One wheel is situated at the centre of the shaft and the other at a distance of 375mm from the centre towards left. The shaft is hollow of external diameter 75mm and internal diameter 40mm. The density of the shaft material is 7700 kg/m^3 and its modulus of elasticity is 200 GN/m^2. Find the lowest whirling speed of the shaft, taking into account the mass of the shaft.	CO5	8 Marks

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II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

FLUID MECHANICS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define and derive expression for surface tension on a Soap bubble.	CO1	7 Marks
	b)	Two horizontal flat plates are placed 0.15mm apart and the space between them is filled with an oil of viscosity 0.1N.s/m^2. The upper plate of area 1.5m^2 is required to move with a speed of 0.5m/s relative to the lower plate. Determine the necessary force and power required to maintain this speed.	CO2	7 Marks

(OR)

2	a)	Define and derive Newton's law of viscosity.	CO1	7 Marks
	b)	What is the pressure inside the droplet of water 0.05mm in diameter at 20^0C, if the pressure outside the droplet is 103kPa. Take surface tension is 0.0736N/m at 20^0C. .	CO4	7 Marks

UNIT-II

3		Derive the expressions total pressure and centre of pressure for a vertical plane surface.	CO3	14 Marks

(OR)

4	a)	In fluid flow, what are the forces present in fluids are in motion? Derive Euler's equation of motion and derive the Bernoulli's equation from Euler's equation of motion.	CO3	7 Marks
	b)	The water is flowing through a pipe having diameters 20cm and 10cm at sections (1) and (2) respectively. The rate of flow through pipe is 35litres/s. The section (1) is 6m above datum and section (2) is 4m above datum. If the pressure at section 1 is 39.24 N/cm^2, find the intensity of pressure at section (2).	CO4	7 Marks

UNIT-III

5		Derive expression for loss of head due to friction in pipes.	CO3	14 Marks

(OR)

6		A jet of water having a velocity of 40m/s strikes a curved vane, which is moving with a velocity of 20m/s. The jet makes an angle of 30° with the direction of motion of vane at inlet and leaves at an angle of 90° to the direction of motion of vane at outlet. Draw the velocity triangles at inlet and outlet and determine the vane angles at inlet and outlet so that the water enters and leaves the vane without shock.	CO2	14 Marks

UNIT-IV

7		Derive an expression for work done and efficiency of a Pelton wheel with help of velocity triangles.	CO4	14 Marks

(OR)

8		A reaction turbine works at 550 r.p.m under head of 110 meters. Its diameter at inlet is 120cm and the flow area is 0.4m^2. The angles made by absolute and relative velocities at inlet are 20° and 60° respectively with the tangential velocity assume whirl at outlet to be zero. Determine: i) The volume flow rate. ii) The power developed. iii) Hydraulic efficiency.	CO5	14 Marks

UNIT-V

9	Define a centrifugal pump. Derive an expression for the work done by an impeller of a centrifugal pump with sketch.	CO3	14 Marks
	(OR)		
10	What is a reciprocating pump? Describe the principle and working of a reciprocating pump with neat sketch and also derive work done per second.	CO6	14 Marks

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II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

MACHINE TOOLS AND MODERN MACHINING PROCESSES

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the major properties required of cutting tool materials? Explain about various cutting tool materials used in practice	CO2	7 Marks
	b)	When cutting mild steel at 50mpm, a carbide tool, had a life of 2hrs. Calculate the tool life if the same tool is used at a speed 25% higher than previous one. Also compute V if the tool is require to have tool life of 3hrs. Take n = 0.27.	CO4	7 Marks
		(OR)		
2	a)	Draw a neat sketch of a single point cutting tool indicating its complete geometry on it.	CO6	7 Marks
	b)	Explain the factors that affect tool life.	CO2	7 Marks

UNIT-II

3	a)	With the help of neat sketch, explain the construction and working of all geared head stock.	CO1	7 Marks
	b)	Briefly describe the steps in cutting a **V** thread on an engine lathe.	CO1	7 Marks
		(OR)		
4	a)	Explain the principle of operation of a Multi-spindle progressive action type horizontal automatic machine.	CO1	7 Marks
	b)	Name the different work holding devices or methods in capstan and turret lathes. Describe any one with neat sketch.	CO1	7 Marks

UNIT-III

5	a)	Describe the differences between a planer and a shaper.	CO1	7 Marks
	b)	Draw the block diagram of a slotting machine and explain briefly its principal parts.	CO1	7 Marks
		(OR)		
6	a)	Explain the construction and working principle of radial drilling machine with neat sketch.	CO1	7 Marks
	b)	Explain about various operations performed on drilling machines.	CO1	7 Marks

UNIT-IV

7	a)	Briefly give the classification of milling machines.	CO1	7 Marks
	b)	Differentiate up milling and down milling process.	CO1	7 Marks
		(OR)		
8	a)	Explain how grinding wheels are specified and selected.	CO3	7 Marks
	b)	Explain briefly about honing and lapping operations with their applications.	CO1	7 Marks

UNIT-V

9	a)	How modern machining processes are classified? Explain in detail.	CO5	7 Marks
	b)	Explain construction and working of USM processes with neat diagram.	CO5	7 Marks
		(OR)		
10	a)	Explain about various characteristics of machine structure of ECM process.	CO5	7 Marks
	b)	Describe properties that are required by a good dielectric fluid in Electrical Discharge Machining (EDM) process. List the types of dielectric fluids used in Electrical Discharge Machining (EDM) process.	CO5	7 Marks

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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)	Classify IC engines based on various considerations.	CO1	7 Marks
	b)	Distinguish between SI and CI engines.	CO2	7 Marks
		(OR)		
2	a)	Label theoretical and actual valve timing diagrams for 4 stroke CI engine and discuss the importance of valve timings.	CO3	7 Marks
	b)	Discuss the reasons for the difference between theoretical and actual indicator diagrams of IC engines.	CO4	7 Marks

UNIT-II

3	a)	Discuss different stages of combustion in SI engines briefly.	CO2	7 Marks
	b)	List out the factors to be considered for designing combustion chambers in SI engines and discuss about SI engine fuels rating.	CO4	7 Marks
		(OR)		
4	a)	What is meant by ignition delay as applied to CI engines and explain how it leads to detonation in CI engines?	CO2	7 Marks
	b)	Discuss the working of any two types of combustion chambers used in CI engines with the help of simplified sketches.	CO2	7 Marks

UNIT-III

5	a)	Discuss the methods of determining friction power in IC engines briefly.	CO2	7 Marks
	b)	A petrol engine consumes 0.3 Kg of fuel per kWh of calorific value 44000 kJ/kg. Compression ratio=5.8. If the mechanical efficiency is 80%. Determine: i) Brake Thermal Efficiency. ii) Indicated Thermal Efficiency. iii) Air standard Efficiency. Efficiency ratio on the basis of Brake Power.	CO3	7 Marks
		(OR)		
6	a)	Discuss briefly the heat balance calculations that can be made on IC engines.	CO4	7 Marks
	b)	During the test on 4 cylinder, 4 stroke petrol engine, the following readings are taken. Diameter of the cylinder = 8cm, stroke of the piston=10 cm, speed of the engine = 3000r.p.m., load on the hydraulic dynamometer = 160N. Dynamometer constant = 20420. When the speed is in r.p.m., fuel consumption = 8kg/hr, CV of the fuel used = 43000kJ/kg. The temperature and pressure of the charge at the end of the suction stroke = 15^0C and 1 bar. A/F = 13:1. For the determination of mechanical efficiency of the engine, a Morse test was carried out by shorting the spark plugs of each cylinder successively without change of speed. The corresponding BP of the engine is 16.5, 16, 15.6 and 17.6kW respectively. Determine: i) BP, BMEP and BTE of the engine. ii) Also find the mechanical efficiency and volumetric efficiency of the engine at the suction condition. Take R (for fuel air mixture) = 287 J/kg K.	CO3	7 Marks

UNIT-IV

7	a)	Discuss briefly the relative merits and demerits of solid, liquid and gaseous fuels.	CO5	7 Marks
	b)	What is meant by stoichiometric air fuel mixture, rich and lean mixtures? Derive the value of stoichiometric air fuel ratio for any hydrocarbon fuel by taking an example.	CO4	7 Marks

(OR)

8	a)	What is meant by Adiabatic flame temperature and enthalpy formation?	CO2	7 Marks
	b)	The volumetric analysis of a fuel gas is given as: C_2H_6 22.6%, CH_4 73.6%, CO_2 2.4% and N_2 1.4%. Assuming combustion air to be dry and in 25% excess, find; i) the molecular weight of the combustion products. ii) the total gas volume for complete combustion at 260^0C, 1.013 bar. iii) the dry flue gas analysis based on CO_2, O_2 and N_2.	CO5	7 Marks

UNIT-V

9		Derive the condition for minimum work spent in case of multi stage compressor and deduce the expression for minimum work for a compressor having 'N' number of stages in terms of suction and delivery pressures.	CO1	14 Marks

(OR)

10	a)	Define volumetric efficiency as applied to reciprocating compressor and derive an expression for the same when suction conditions are different than free air conditions.	CO2	7 Marks
	b)	Explain the working of Centrifugal compressor with the help of a neat sketch.	CO1	7 Marks

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II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

ANALOG COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	A carrier signal c(t)=6cos(60000πt) is amplitude modulated with a modulating signal m(t)=3cos(1800πt). Calculate the transmitted power for each of the following cases and comment on the results: i) If the modulating signals voltage is doubled. ii) If the carrier signals voltage is doubled. iii) If the modulating signals frequency is doubled. iv) If the carrier signal is removed from the transmitted signal.	CO4	8 Marks
	b)	Compare AM, DSB-SC and SSB-SC modulation schemes.	CO1	6 Marks
		(OR)		
2	a)	A 500 KHz carrier signal of peak amplitude 10V is amplitude modulated with a modulating signal of peak amplitude 2V and 5KHz frequency. i) Derive the expression for modulated wave in time domain and frequency domain. ii) Find the maximum and minimum values of the envelope. From these values find the modulation index and efficiency.	CO4	8 Marks
	b)	Discuss in detail about Frequency Division Multiplexing with neat diagram.	CO1	6 Marks

UNIT-II

3	a)	Justify how a NBFM signal is equal to AM signal.	CO1	5 Marks
	b)	A device with input $x(t)$ and output $y(t)$ is characterized by: $y(t) = x^2(t)$. An FM signal with frequency deviation of 100KHz and modulating signal bandwidth of 10KHz is applied to this device. Find the bandwidth of the output signal.	CO4	9 Marks
		(OR)		
4	a)	Consider the FM signal $S(t) = 20\cos[4\pi 10^6 t + 10\sin(4\pi 10^3 t)]$. i) Calculate frequency deviation, bandwidth and power. ii) Calculate above quantities when the message signal amplitude is doubled.	CO4	6 Marks
	b)	Discuss how PLL is useful in extracting message signal from FM signal.	CO1	4 Marks
	c)	Discuss about transmission bandwidths of FM signal.	CO5	4 Marks

UNIT-III

5		Estimate Signal to Noise ratio of an amplitude modulation system.	CO2	14 Marks
		(OR)		
6		Estimate Signal to Noise ratio of an angle modulation system.	CO2	14 Marks

UNIT-IV

7	a)	Compare AM and FM receivers in detailed manner.	CO3	7 Marks
	b)	Discuss about Tuned Radio Frequency Receiver with neat block diagram.	CO3	7 Marks
		(OR)		
8	a)	A Super heterodyne receiver having RF amplifier is tuned to 1200KHz. Determine the image frequency of the receiver.	CO5	3 Marks
	b)	Discuss about Amplitude limiting in FM receiver.	CO6	5 Marks
	c)	Discuss about super heterodyne FM receiver with neat block diagram.	CO3	6 Marks

UNIT-V

9	a)	Compare PAM, PWM and PPM modulation schemes.	CO1	6 Marks
	b)	Explain the generation and detection of PWM signal.	CO1	8 Marks
		(OR)		
10	a)	Two signals are band limited to 3KHz and 5KHz are to be time division multiplexed. Find the maximum permissible interval between two successive samples.	CO1	4 Marks
	b)	Discuss on bandwidth requirement for transmission of PAM signals.	CO2	5 Marks
	c)	Discuss how a message signal is extracted from a PAM signal.	CO1	5 Marks

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II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the CMOS inverter circuit behaviour with resistive loads.	CO2	7 Marks
	b)	Draw the circuit diagram of two input NAND gate by using CMOS logic and explain its operation along with the truth table.	CO2	7 Marks

(OR)

2	a)	Draw and explain the concept of CMOS / TTL interfacing along with one example.	CO1	8 Marks
	b)	List out the differences between TTL, ECL and CMOS logic families.	CO1	6 Marks

UNIT-II

3	a)	Design a logic circuit to detect prime number of a 4-bit input. Write the Verilog HDL program for the same in structural style of modelling.	CO5	8 Marks
	b)	Briefly explain a typical design flow for designing VLSI IC circuits using the block diagram.	CO4	6 Marks

(OR)

4	a)	Write the Verilog description of 4-bit ripple carry adder at gate level abstraction.	CO4	7 Marks
	b)	Discuss different loop statements in Verilog HDL.	CO6	7 Marks

UNIT-III

5	a)	Implement the following Boolean expression using 74X151 IC. F = AB + BC + AC.	CO4	8 Marks
	b)	Explain the different functions performed by the 74X181 4-bit ALU.	CO3	6 Marks

(OR)

6	a)	Draw the logic diagram of IC 74X280 and explain its operation with the help of a truth table.	CO3	7 Marks
	b)	Sketch the logic diagram and write a Verilog HDL code for 74X148 IC.	CO5	7 Marks

UNIT-IV

7	a)	Design a 4-bit binary synchronous counter using 74X74. Write VHDL program for this logic.	CO3	8 Marks
	b)	Explain the functional and internal behaviour of Master Slave JK flipflop.	CO1	6 Marks

(OR)

8	a)	Design a 3-bit LFSR counter using 74X194. List out the sequence assuming that the initial state is 111.	CO4	8 Marks
	b)	Write short notes on: i) Clock Skew. ii) Gating the Clock.	CO1	6 Marks

UNIT-V

9	a)	With the help of timing waveforms, explain Read and Write operations of SRAM.	CO1	6 Marks
	b)	Explain the necessity of 2-dimensional decoding mechanism in memories. Draw MOS transistor memory cell in ROM and explain the operation.	CO4	8 Marks

(OR)

10	a)	Draw the internal structure of synchronous SRAM and explain its operating modes.	CO1	7 Marks
	b)	With neat diagrams, explain Logic Block architecture of XC4000 FPGA.	CO1	7 Marks

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CODE No.:16BT40403 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

ELECTROMAGNETIC THEORY AND TRANSMISSION LINES

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Determine the expression for electric flux density $\vec{D}$ for an uniformly charged sphere and sketch its variation of magnitude with respect to radius of the sphere.	CO1	8 Marks
	b)	Three point charges $Q_1 = 10^{-6}$ C, $Q_2 = -10^{-6}$ C and $Q_3 = 0.5 \times 10^{-6}$ C are located in air at the corners of an equilateral triangle of 50cm side. Determine the magnitude and direction of force on Q_3.	CO1	6 Marks
		(OR)		
2	a)	By applying Biot-Savart's law, obtain the expression for magnetic field intensity of a semi-infinite line.	CO1	7 Marks
	b)	Given a potential $\mathbf{V = 3x^2 + 4y^2\ V}$. Find the energy stored in the volume described by $\mathbf{0 \le x \le 1m,\ 0 \le y \le 1m,\ 0 \le z \le 1m}$.	CO2	7 Marks

UNIT-II

3	a)	Why there exists an inconsistency in Ampere's circuit law and explain how it is overcome?	CO2	7 Marks
	b)	Given $\mu = 3 \times 10^{-5}$ H/m, $\epsilon_R = 1.2 \times 10^{-10}$ F/m and $\sigma = 0$ everywhere, if $\vec{H} = 2\cos(10^{10}t - \beta x)\ \bar{a}\ z$ A/m, find 'β'.	CO5	7 Marks
		(OR)		
4	a)	Define Boundary condition. Derive the expressions for $\vec{E}$ and $\vec{D}$ at Dielectric-Conductor interface.	CO2	7 Marks
	b)	In free space, $\boldsymbol{E(z, t) = 1.0 \sin(\omega t - \beta z)\ a_x\ V/m}$. Find the average power crossing a circular disk of radius 15.5m in a z = constant plane.	CO2	7 Marks

UNIT-III

5	a)	With a neat sketch at different time instants, explain different types of Polarization.	CO4	7 Marks
	b)	Find **α, β, γ** and **η** for ferrite at 10GHz when $\epsilon_r = 9$, $\mu_r = 4$, $\sigma = 10$ mS/m.	CO4	7 Marks
		(OR)		
6	a)	Define: i) Uniform plane wave. ii) Total internal reflection. iii) Brewster angle.	CO1	6 Marks
	b)	A uniform plane wave at a frequency of 1 GHz is travelling in a large block of dielectric with $\epsilon_r = 55$, $\mu_r = 1$ and $\sigma = 0.05$ S/m. Determine **γ, η, β** and **λ**.	CO4	8 Marks

UNIT-IV

7	a)	Ascertain that a finite transmission line terminated by characteristic impedance is equivalent to an infinite transmission line.	CO3	7 Marks
	b)	At a frequency of 100 MHz, the following values are appropriate for a certain transmission line L=0.25μ H/m; C = 80 pF/m, R = 0.15 Ω/m and G=8 Ω/m. Calculate values for: (*i*) **α** (*ii*) **β** (*iii*) **λ** (*iv*) **v** (*v*) $\mathbf{Z_o}$.	CO6	7 Marks
		(OR)		

8	a)	Define: i) Transmission line. ii) Infinite line. iii) Distortion less line. iv) Lossless line.	CO1	8 Marks
	b)	Develop the expressions for voltage and current at any point on the transmission line in terms of receiving end voltage and current.	CO3	6 Marks

UNIT-V

9	a)	Develop the relation between Reflection Coefficient and VSWR.	CO1	6 Marks
	b)	Design a single stub match for a load of 150+j225 ohms for a 75 ohms line at 500 MHz using smith chart.	CO6	8 Marks

(OR)

10	a)	Evaluate short circuit and open circuit impedances of **λ/8, λ/4** and **λ/2** lines.	CO4	7 Marks
	b)	What is a stub and mention types of stubs? Why are short circuited stubs preferred to open circuited ones? Explain.	CO3	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Show, why CMRR for an emitter coupled differential amplifier tend to infinite when it's R_E tends to infinite.	CO1	7 Marks
	b)	Explain the concept of level translator in detail.	CO1	7 Marks
		(OR)		
2	a)	Derive the amplifier gain from AC analysis of single input dual output differential amplifier configuration.	CO1	7 Marks
	b)	List and explain the parameters that are important for AC applications.	CO1	7 Marks

UNIT-II

3	a)	What is an instrumentation amplifier? Draw a system whose gain is controlled by an adjustable resistor.	CO1	7 Marks
	b)	Draw the circuit of a log amplifier using two op-amps and explain its operation.	CO3	7 Marks
		(OR)		
4	a)	Draw and explain the circuit of a lossy integrator showing initial conditions.	CO3	7 Marks
	b)	Explain about generation of square wave and triangular wave forms using op-amps.	CO3	7 Marks

UNIT-III

5	a)	Explain how line and load regulation is obtained in a series op-amp voltage regulator.	CO1	7 Marks
	b)	Draw a wide band pass active filter using op-amps and derive for its transfer function.	CO2	7 Marks
		(OR)		
6	a)	What is a notch filter? Explain how a wide band rejection filter response is obtained.	CO2	7 Marks
	b)	Design a first order low pass filter for high cutoff frequency of 2kHz and pass band gain of 2.	CO2	7 Marks

UNIT-IV

7	a)	Explain the functionality of following inputs in IC 555 timer. i) Reset pin. ii) Control input. iii) Discharge pin.	CO1	7 Marks
	b)	List and explain any two of the applications of a PLL.	CO1	7 Marks
		(OR)		
8	a)	Give the block diagram of IC566 VCO and explain its operation.	CO1	7 Marks
	b)	Design a square waveform generator of frequency 100Hz and duty cycle of 70% using a 555 timer.	CO1	7 Marks

UNIT-V

9	a)	How many levels are possible with 3 bit DAC? What is its resolution if the output range is 0 to 5V?	CO1	7 Marks
	b)	Explain the important specifications of A/D and D/A converters.	CO1	7 Marks
		(OR)		
10	a)	Explain the advantage and disadvantages in both weighted and R-2R ladder type of DAC.	CO1	6 Marks
	b)	Explain the operation of a Dual-slope ADC.	CO1	8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

PROBABILITY AND STOCHASTIC PROCESS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define total probability theorem and prove it.	CO1	7 Marks
	b)	A town has a population of 10000 people, of these 6000 male and 4000 female. Also 300 male and 400 female are unemployed. An unemployed person is chosen at random. What is the probability that he is a male?	CO3	7 Marks
		(OR)		
2	a)	A machine gun fires 3 seconds at the rate of 2400 bullets/minute. The probability of bullet hitting target is 0.4. What is probability that exactly 50 bullets hits the target?	CO3	7 Marks
	b)	What are axioms of probability? Explain the concept of Bernoulli's trails and its limitations.	CO1	7 Marks

UNIT-II

3	a)	Buses arrive at a specific bus stop at 15 minutes interval starting at 7am i.e. they arrive at 7, 7:15, 7:30 ……am. If a passenger arrives at a bus stop at random time that is uniformly distributed between 7am and 7:30am, find the probability that he waits for: i) Less than 5 minutes. ii) Atleast 12 minutes for a bus.	CO3	7 Marks
	b)	Explain moments about the origin and moments about the mean. Also develop the relationship between them.	CO2	7 Marks
		(OR)		
4	a)	Assume the height of clouds above the ground at some location is a Gaussian random variable X with mean and variance 1830m and 460m respectively. Find the probability that clouds will be higher than 2750m.	CO3	7 Marks
	b)	A and B play a game in which their chances of winning are in the ratio of 3:2, then find A's chance of winning atleast 3 out of 10 games played.	CO3	7 Marks

UNIT-III

5	a)	The joint distribution function of two random variables X and Y is given by $f_{XY}(x, y) = 1 - e^{-x} - e^{-y} + e^{-(x+y)}$; $x > 0$ and $y > 0$. Are X and Y are independent? Also deduce $P(X \le 1, Y \le 1)$.	CO2	7 Marks
	b)	State central limit theorem and explain in brief.	CO2	7 Marks
		(OR)		
6	a)	The joint density function of two dimensional random variables X and Y is $f_{XY}(x, y) = xy^2 + x^2/8$; $0 \le x \le 2$, $0 \le y \le 1$, then find: i) $P(X + Y < 1)$ ii) $P(Y < 0.5)$ iii) $P(X > 1/Y < 0.5)$	CO2	7 Marks
	b)	Find the correlation coefficient between X and Y if the joint density function is $f_{XY}(x, y) = 2$; $x > 0$, $y > 0$, $x + y < 1$.	CO3	7 Marks

UNIT-IV

7	a)	A random process $Y(t)$ is given as $Y(t) = X(t)\cos(\omega t+\theta)$ where $X(t)$ is a WSS random process, ω is a constant and θ is a random phase independent of $X(t)$ uniformly distributed on $(-\pi, \pi)$. Find expectation and auto correlation of $Y(t)$.	CO2	7 Marks
	b)	What do you mean by mean ergodic random processes and correlation ergodic random processes?	CO2	7 Marks
		(OR)		
8	a)	Define cross correlation function and write atleast 4 properties.	CO2	7 Marks
	b)	Explain Poisson and Gaussian random processes in brief.	CO2	7 Marks

UNIT-V

9	a)	Two resistors of $3\,k\Omega$ and $6\,k\Omega$ are at temperature 300K and 400K respectively. Find the power spectral density of the noise voltage at the output when resistances are in series and parallel.	CO4	7 Marks
	b)	Explain thermal noise and shot noise with necessary equations.	CO4	7 Marks
		(OR)		
10	a)	Define noise figure and express in terms of temperature and available power gain with expressions.	CO4	7 Marks
	b)	Explain internal noise and external noise in brief.	CO4	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

PULSE AND DIGITAL CIRCUITS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

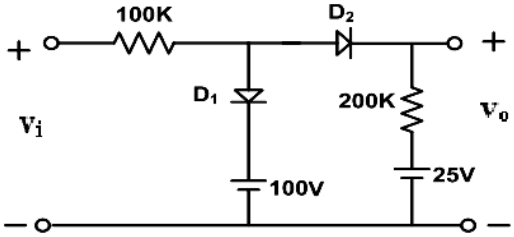
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	A pulse is applied to a low pass RC circuit. Prove by direct integration that the area under the pulse is the same as the area under the output waveform across the capacitor.	CO1	7 Marks
	b)	Find the response of the RC high pass filter excited by ramp input.	CO1	7 Marks
		(OR)		
2	a)	How to implement an integrator with RC low pass filter?	CO2	7 Marks
	b)	Derive the expression for output from a ringing circuit.	CO2	7 Marks

UNIT-II

3	a)	What is the effect of source and diode resistances on the operation of a clamping circuit?	CO3	7 Marks
	b)	The input voltage $\mathbf{v_i}$ to the two level clipper varies linearly from 0 to 150V. Sketch the output voltage $\mathbf{v_o}$ to the same time scale as the input voltage. Assume ideal diodes.	CO4	7 Marks



(OR)

4	a)	What is synchronized clamping?	CO2	7 Marks
	b)	State and prove clamping circuit theorem.	CO1	7 Marks

UNIT-III

5	a)	Compare symmetrical and unsymmetrical methods of triggering a binary in all respects.	CO3	7 Marks
	b)	Explain the method of converting a sinusoidal signal into a square wave using Schmitt trigger.	CO3	7 Marks
		(OR)		
6	a)	Derive the expression for frequency of oscillations of an astable multivibrator.	CO4	7 Marks
	b)	Explain in detail about turn-on and turn-off times in a transistor switch.	CO3	7 Marks

UNIT-IV

7	a)	How to generate sweep voltage using Bootstrap principle?	CO3	7 Marks
	b)	Explain in detail about the operation of current sweep circuit.	CO5	7 Marks
		(OR)		
8	a)	How to generate sweep voltage with constant current source?	CO3	7 Marks
	b)	Derive the expression for sweep speed error in an exponential circuit.	CO5	7 Marks

UNIT-V

9	a)	What is pedestal and how to reduce it?	CO6	7 Marks
	b)	Draw the circuit diagram of four diode sampling gate and explain its operation.	CO1	7 Marks
		(OR)		
10	a)	Implement NOR gate using CMOS logic.	CO1	7 Marks
	b)	Explain the operation of TTL logic family.	CO1	7 Marks

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CODE No.:16BT40501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

COMPUTER GRAPHICS

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain different types of color CRT monitors.	CO1	7 Marks
	b)	Compare and contrast emissive displays and non-emissive displays.	CO1	7 Marks
		(OR)		
2	a)	Differentiate Bresenham line generation and DDA line generation.	CO3	7 Marks
	b)	Write an algorithm to draw a circle using Bresenham method.	CO3	7 Marks

UNIT-II

3	a)	Compare and contrast boundary fill and flood fill methods to fill polygon regions with suitable example.	CO4	7 Marks
	b)	What is an odd-even rule and non-zero winding number method? Explain with an example.	CO5	7 Marks
		(OR)		
4	a)	Perform a 90^0 rotation of a triangle A (0, 0), B (1, 1) and C (5, 2) in counter clockwise direction about origin.	CO2	7 Marks
	b)	Magnify the triangle with vertices A (0, 0), B (1, 1) and C (5, 2) to twice its size while keeping C (5, 2) fixed.	CO2	7 Marks

UNIT-III

5	a)	Write a short note on 2D viewing functions.	CO1	7 Marks
	b)	Perform the line clipping for the line segment AB where A = (2, 1) and B = (11, 9) for the window coordinates (5, 0), (12, 0), (5, 8) and (12, 8) using Cohen-Sutherland algorithm.	CO2	7 Marks
		(OR)		
6	a)	What is a Bezier curve? Explain the properties of Bezier curve.	CO1	7 Marks
	b)	Write a short note on interpolation techniques.	CO1	7 Marks

UNIT-IV

7	a)	Write a short note on Rotations with Quaternions.	CO2	7 Marks
	b)	Prove that the multiplication of 3D transformation matrices for the following sequence of operations is commutative: i) any two successive translations. ii) any two successive scaling operations.	CO2	7 Marks
		(OR)		
8	a)	What is a projection? Explain different types of parallel projections.	CO1	7 Marks
	b)	Describe: i) One-principal-vanishing point perspective. ii) Two-principal-vanishing point perspective. iii) Three-principal-vanishing point perspective.	CO4	7 Marks

UNIT-V

9	a)	What are the advantages of scan-line method for visible surface detection? Discuss in detail.	CO1	7 Marks
	b)	Explain the basic functions of depth-sorting algorithm.	CO5	7 Marks
		(OR)		
10	a)	Illustrate the area-subdivision method for visible surface detection.	CO1	7 Marks
	b)	Compare and contrast Gouraud shading and Phong shading.	CO5	7 Marks

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CODE No.:16BT40502 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

DATABASE MANAGEMENT SYSTEMS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Differentiate logical and physical data independence.	CO1	7 Marks
	b)	What are the different levels of abstraction of a DBMS? Briefly explain each of them.	CO1	7 Marks
		(OR)		
2	a)	What is an entity type and an entity set? Explain the difference between a relationship instance and a relationship type.	CO1	7 Marks
	b)	Draw an E-R diagram for banking system. Assume your own entities (Minimum of 5 entities), attributes and relations, mention cardinality ratio.	CO3	7 Marks

UNIT-II

3	a)	With an example, explain clearly JOIN and UNION operations in relational algebra. Bring out the difference between NATURAL JOIN and OUTER JOIN.	CO1	7 Marks
	b)	Explain the aggregate functions used in relational algebra.	CO1	7 Marks
		(OR)		
4	a)	Discuss the various update operations on relations and the types of integrity constraints that must be checked for each update operation.	CO1	7 Marks
	b)	What are Integrity Constraints? When Integrity Constraints are enforced by a DBMS? Discuss.	CO1	7 Marks

UNIT-III

5	a)	Why is accessing a disk block expensive? Discuss the time components involved in accessing a disk block.	CO5	7 Marks
	b)	Show the steps necessary to compile an embedded SQL program.	CO5	7 Marks
		(OR)		
6	a)	Describe domain relational calculus and Tuple relational calculus with suitable examples	CO2	7 Marks
	b)	Solve the following queries in SQL. i) To fetch ALTERNATE records from a table. ii) Find the 3rd MAX salary in the emp table. iii) How to delete duplicate rows in a table? iv) Count MGR and their salary in emp table.	CO5	7 Marks

UNIT-IV

7	a)	What is Normalization? Explain 1NF, 2NF, 3NF and BCNF with suitable example.	CO2	7 Marks
	b)	Discuss under what conditions is it less expensive to avoid deadlock than to allow deadlocks to occur and then to detect them.	CO4	7 Marks
		(OR)		
8	a)	Differentiate functional dependency and multi valued dependency with example.	CO3	7 Marks
	b)	Differentiate two phase commit and three phase commit protocol.	CO2	7 Marks

UNIT-V

9	a)	In detail summarize three kinds of database tuning. i) Recovery interval. ii) Assigning parallelism. iii) Network protocols to communicate with database consumers.	CO3	7 Marks
	b)	Demonstrate on: i) Spatial and multimedia databases. ii) Mobile and web databases.	CO3	7 Marks
		(OR)		
10	a)	Illustrate indexing and hashing techniques with suitable examples.	CO5	7 Marks
	b)	Briefly explain ACID property with an example.	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

INDUSTRIAL INSTRUMENTATION - I

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the following. i) Pneumatic. ii) Strain gauge method.	CO2	14 Marks
		(OR)		
2	a)	Identify an appropriate load cell base sensor for measurement of force that is non contact type. Justify it.	CO3	7 Marks
	b)	Elaborate on the working principle of torque measurement based on Weidman magnetostrictive.	CO1	7 Marks

UNIT-II

3	a)	Give three different units of velocity and explain moving coil type and moving iron type velocity sensors.	CO3	7 Marks
	b)	Elaborate on reluctance type acceleration measurement.	CO2	7 Marks
		(OR)		
4	a)	Design a sensing mechanism to measure acceleration using optical technique.	CO3	7 Marks
	b)	Explain capacitive type and drag cup type velocity measurement.	CO2	7 Marks

UNIT-III

5	a)	Select an appropriate sensor for measuring medium pressure. Justify it.	CO2	7 Marks
	b)	Describe the operation of ionization gauge and give its advantages.	CO3	7 Marks
		(OR)		
6	a)	Analyze different types of elastic transducers.	CO4	7 Marks
	b)	Elaborate on force balance and vibrating cylinder type pressure measurement.	CO2	7 Marks

UNIT-IV

7	a)	Identify an appropriate sensor for measurement of high range temperatures while providing high linearity and accuracy. Justify it.	CO4	7 Marks
	b)	In temperature measurement systems, explain about Filled in system and RTD.	CO2	7 Marks
		(OR)		
8	a)	Differentiate temperate and heat. Explain about solid expansion type measurement.	CO3	7 Marks
	b)	Explain about thermistor working principle and sensor types.	CO2	7 Marks

UNIT-V

9	a)	List the different types of radiation thermometers. Explain optical pyrometers with neat sketch.	CO1	7 Marks
	b)	Elaborate on spectroscopic temperature measurement.	CO2	7 Marks
		(OR)		
10	a)	Identify an appropriate sensor for measurement of very high temperature. Justify it.	CO4	7 Marks
	b)	Elaborate on analysis and selection process required to select temperature sensors.	CO2	7 Marks

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CODE No.:16BT41002 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

LINEAR AND DIGITAL ICS

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Prove that the gain of non-inverting amplifier is more than inverting amplifier. What configuration is preferred as voltage amplifier and why?	CO4	7 Marks
	b)	Explain the need for frequency compensation and discuss about the various types of frequency compensation.	CO1	7 Marks
		(OR)		
2	a)	List the DC and AC characteristics of the op-amp 741. Explain the purpose of current mirror.	CO4	6 Marks
	b)	Discuss about op-amp ideal and practical characteristics. Define CMRR and PSRR.	CO1	8 Marks

UNIT-II

3	a)	Design a second order Butterworth high pass filter with cut off frequency of 3 KHz.	CO2	7 Marks
	b)	Distinguish comparator and window detector. Explain about instrumentation amplifier.	CO2	7 Marks
		(OR)		
4	a)	Discuss the operations of log and antilog amplifiers with op-amp 741.	CO1	6 Marks
	b)	Paraphrase the op-amp based astable and monostable multivibrators in detail.	CO1	8 Marks

UNIT-III

5	a)	Derive the expression for total time period in the monostable multivibrator using 555 timer.	CO5	7 Marks
	b)	Design a 555 timer based square wave generator to produce a symmetrical square wave of 2 kHz, if V_{cc}=12V, draw the voltage across timing capacitor and output.	CO3	7 Marks
		(OR)		
6	a)	In a PLL circuit if R_T = 10 KΩ, C_T = 0.005μF, C = 10μF and +V and –V are 10 and -10 respectively then calculate the free running frequency, lock range and capture range and plot the relationship between f_{out}, f_L and f_C.	CO4	5 Marks
	b)	Narrate the operation of voltage controlled oscillator with 555 timer.	CO1	9 Marks

UNIT-IV

7	a)	Discuss about data flow modelling in HDL with suitable examples.	CO6	7 Marks
	b)	Discuss about different operators that are being used in HDL coding.	CO2	7 Marks
		(OR)		
8	a)	Construct CMOS based NAND and NOR gates.	CO3	7 Marks
	b)	Discuss about program structure and language elements in HDL.	CO5	7 Marks

UNIT-V

9	a)	Design full adder using 3:8 decoder.	CO3	7 Marks
	b)	Develop Verilog code for 4-bit left shift register.	CO6	7 Marks
		(OR)		
10	a)	Design 4-bit counter using 74X163 IC's and give the operation in detail.	CO3	7 Marks
	b)	Develop HDL code for 1:8 demultiplexer.	CO6	7 Marks

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CODE No.:16BT41041 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

COMPUTER ARCHITECTURE AND ORGANIZATION

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain memory hierarchy in a computer system with block diagram.	CO1	7 Marks
	b)	Describe functional units of a computer.	CO1	7 Marks
		(OR)		
2	a)	Define the Dynamic RAM (DRAM). Explain the working of DRAM with a neat diagram.	CO3	7 Marks
	b)	Explain Flash memory and Cache memory.	CO1	7 Marks

UNIT-II

3	a)	Explain I/O and machine control instructions.	CO2	7 Marks
	b)	Write any five data transfer instructions with suitable examples.	CO2	7 Marks
		(OR)		
4		Describe pin diagram of 8085 with functions of each pin.	CO1	14 Marks

UNIT-III

5	a)	What are the various registers in 8085? Explain.	CO1	7 Marks
	b)	Explain the functions of IO/M, READY, HOLD and HLDA in 8085.	CO2	7 Marks
		(OR)		
6	a)	What is addressing? What are the various addressing modes available in 8085?	CO5	7 Marks
	b)	Write an 8085 program to generate a time delay of second given crystal frequency 4MHz.	CO4	7 Marks

UNIT-IV

7	a)	Explain three state bus buffer.	CO1	7 Marks
	b)	Describe hardware implementation of log micro operation.	CO3	7 Marks
		(OR)		
8	a)	Explain arithmetic logic shift unit with the help of function table and diagram of one stage arithmetic logic shift unit.	CO1	8 Marks
	b)	List out the advantages of RISC and CISC.	CO3	6 Marks

UNIT-V

9	a)	What is the difference between a micro processor and a micro program? Is it possible to design a micro processor without a micro program?	CO6	7 Marks
	b)	Discuss hardware algorithms for multiplications.	CO5	7 Marks
		(OR)		
10	a)	Explain the design of control unit.	CO3	7 Marks
	b)	Explain in detail about instruction hazards.	CO5	7 Marks

CODE No.:16BT41201 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

DESIGN AND ANALYSIS OF ALGORITHMS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

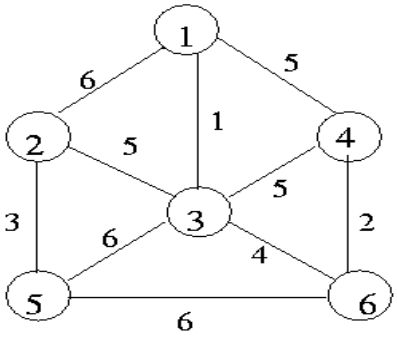
1	a)	What is meant by recursion? Explain the direct and indirect recursive algorithms with example.	CO1	7 Marks
	b)	Solve the following recurrence relations: i) $T(n) = T(n-1) + 3$. ii) $T(n) = 3T(n-1) + 2$.	CO1	7 Marks
		(OR)		
2	a)	Explain the concept of the following asymptotic notations with suitable examples. i) Omega Notation. ii) Big Oh Notation. iii) Theta Notation.	CO1	7 Marks
	b)	Discuss the general plan for analyzing efficiency of Non recursive and Recursive algorithms.	CO1	7 Marks

UNIT-II

3	a)	Generalize that the maximum matching is in bipartite graphs.	CO3	7 Marks
	b)	With an example, explain the DFS algorithm.	CO2	7 Marks
		(OR)		
4	a)	Differentiate Connected and Bi-connected components.	CO2	7 Marks
	b)	Explain the procedure to detect cycle in an undirected graph.	CO2	7 Marks

UNIT-III

5	a)	Explain Quick sort using Divide and Conquer.	CO4	7 Marks
	b)	Construct minimum cost spanning tree for the following graph using: i) Kruskal's algorithm. ii) Prim's algorithm.	CO5	7 Marks



(OR)

6	a)	Examine that the procedure SEARCH of binary search algorithm gives the smallest possible expected search time if all elements in the universal set are equally likely to be sought.	CO1	7 Marks
	b)	Compute the multiplication of 2 matrices using Strassen's matrix multiplication method.	CO4	7 Marks

$$A = \begin{bmatrix} 3 & 3 \\ 3 & 3 \end{bmatrix} \qquad B = \begin{bmatrix} 5 & 5 \\ 5 & 5 \end{bmatrix}$$

UNIT-IV

7	a)	Draw an optimal Binary Search Tree for n = 4 identifiers ($a1$, $a2$, $a3$, $a4$) = (do, if, read, while) with $P(1:4)$ = (3,1,1,3) and $Q(0:4)$ = (1,3,1,2,1).	CO5	7 Marks
	b)	Explain 0/1 knapsack problem.	CO5	7 Marks
		(OR)		
8	a)	Briefly explain sum of subsets problem using Backtracking technique.	CO1	7 Marks
	b)	Describe the Backtracking technique to m-coloring graph. Explain with an example.	CO1	7 Marks

UNIT-V

9	a)	Explain the terms P, NP, NP – Hard and NP – Complete.	CO3	7 Marks
	b)	Explain Node Cover Decision problem. Prove that Node Cover Decision Problem (NCDP) is NP-Hard.	CO3	7 Marks
		(OR)		
10	a)	Sort the following list using PRAM sorting: $X = \{19, 20, 27, 29, 31, 34, 40, 9, 22, 12, 6, 8, 4, 2, 11, 15\}$.	CO4	7 Marks
	b)	Illustrate deterministic and non-deterministic algorithms. Give some examples.	CO3	7 Marks

CODE No.:16BT41202 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

JAVA PROGRAMMING

[Computer Science and Engineering, Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the features of JAVA that supports object oriented programming? Discuss in brief.	CO1	6 Marks
	b)	What is overloading? Explain constructor overloading with example.	CO1	8 Marks
		(OR)		
2	a)	Explain about JAVA control statements with examples.	CO2	8 Marks
	b)	Write the significance of 'this' keyword with example.	CO2	6 Marks

UNIT-II

3	a)	Discuss about final keyword usage in inheritance with suitable programs.	CO3	7 Marks
	b)	What is a package? Write the advantage creating packages in program.	CO3	7 Marks
		(OR)		
4	a)	What is the difference between class, abstract class and interface?	CO2	7 Marks
	b)	What are the different forms of inheritance? Explain.	CO2	7 Marks

UNIT-III

5	a)	Explain about exception handling in JAVA with examples in detail.	CO2	7 Marks
	b)	Write a JAVA program to demonstrate multithreading operation.	CO3	7 Marks
		(OR)		
6	a)	Differentiate between multithreading and multitasking.	CO3	7 Marks
	b)	What is the role of 'finally' in exception handling? Explain with an example.	CO3	7 Marks

UNIT-IV

7	a)	Write a note on dialog box usage in user interfaces.	CO4	6 Marks
	b)	What is the significance of layout managers? Discuss briefly various layout managers.	CO4	8 Marks
		(OR)		
8	a)	Explain about the components and containers of AWT.	CO4	8 Marks
	b)	What is an Applet? List out different types of Applet.	CO4	6 Marks

UNIT-V

9	a)	Develop the event handler for the Action event.	CO2	7 Marks
	b)	Explain how client and server are involved in web application.	CO5	7 Marks
		(OR)		
10	a)	How to create and compile servlet code?	CO5	7 Marks
	b)	Discuss about ***JavaXC.Servlet*** package.	CO4	7 Marks

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CODE No.:16BT41203 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

SOFTWARE ENGINEERING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain any two software myth related to management myth with its reality.	CO1	7 Marks
	b)	Define software process. Explain RAD model for software development with its various phases.	CO1	7 Marks
		(OR)		
2	a)	Build V-model with a neat diagram for planning and validation process.	CO1	7 Marks
	b)	Explain system engineering hierarchy. What are the restraining factors to construct a system model?	CO1	7 Marks

UNIT-II

3	a)	Why is traceability an important aspect of requirement management? Why context system models are useful for requirements validation?	CO2	7 Marks
	b)	Draw an ER and DFD diagram for university information system.	CO2	7 Marks
		(OR)		
4	a)	Describe the primary difference between structured analysis and object oriented analysis.	CO2	7 Marks
	b)	Explain about the cardinality and modality with suitable example.	CO2	7 Marks

UNIT-III

5	a)	Draw a translating diagram for analysis model into a software design. Brief about each translations.	CO3	7 Marks
	b)	Write short notes on user interface design process.	CO3	7 Marks
		(OR)		
6	a)	Discuss in detail about the design process in software development process.	CO3	7 Marks
	b)	How interrupts are handled in real time system? Explain.	CO3	7 Marks

UNIT-IV

7	a)	What is the need for software maintenance and maintenance report?	CO4	7 Marks
	b)	Discuss the differences between black box and white box testing.	CO4	7 Marks
		(OR)		
8	a)	Explain the integration testing process and system testing process and discuss their outcomes. Give a case study of a system testing for operating system.	CO4	7 Marks
	b)	What do you mean by boundary value analysis? Give two examples of boundary value testing.	CO4	7 Marks

UNIT-V

9	a)	Explain in detail about quality assurance and standards.	CO5	7 Marks
	b)	Differentiate between proactive and reactive risk strategies.	CO6	7 Marks
		(OR)		
10	a)	Explain the factors that affect the quality of a project.	CO5	7 Marks
	b)	What are all the formulas for cyclomatic complexity? Calculate cyclomatic complexity for greatest of three numbers.	CO4	7 Marks

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CODE No.:16BT41204 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

THEORY OF COMPUTATION

[Information Technology, Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Design a NFA which accepts the strings containing either 01 or 10 over $\Sigma = \{0,1\}$. Show the acceptance of a string with an example.	CO3	7 Marks
	b)	Construct a DFA equivalent for the following NFA given By	CO5	7 Marks

δ	0	1
– >p	{p, r}	{q}
Q	{r, s}	{p}
*r	{p, s}	{r}
*s	{q, r}	–

(OR)

2	a)	Prove that a language L is accepted by some DFA if and only if L is accepted by some NFA.	CO1, CO4	7 Marks
	b)	Construct a Moore machine to find out the residue modulo-3 for binary numbers	CO3	7 Marks

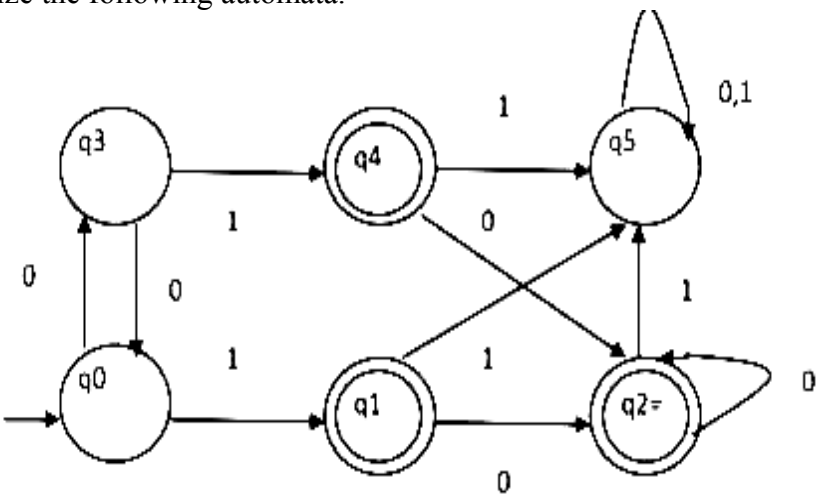
UNIT-II

3	a)	State and prove the pumping lemma for Regular Languages.	CO1, CO2	7 Marks
	b)	Construct equivalent regular expression corresponding to the given DFA where **q1** is both the initial state and final state.	CO3	7 Marks

δ	0	1
q1	q1	q2
q2	q3	q2
q3	q1	q2

(OR)

4	a)	State pumping lemma for regular languages and explain the applications of the pumping lemma.	CO1, CO2	7 Marks
	b)	Minimize the following automata.	CO5	7 Marks



UNIT-III

5	a)	Construct context-free grammar for the following language. $L = \{a^i b^i c^k \mid I = j + k\}$.	CO3	7 Marks
	b)	Show that the following grammar is ambiguous. $S \rightarrow a \mid aAb \mid abSb$ $A \rightarrow bS \mid aAAb$	CO3	7 Marks

(OR)

6	a)	Convert the following CFG into GNF. $S \rightarrow XY$ $X \rightarrow YS \mid b$ $Y \rightarrow SX \mid a$	CO3	10 Marks
	b)	State the applications of context-free grammars.	CO3	4 Marks

UNIT-IV

7	a)	Construct a PDA to accept the language $L = \{a^n b^{2n}, \mid n \geq a\}$ by empty stack and final state	CO3	12 Marks
	b)	Define the instantaneous description of a PDA.	CO3	2 Marks

(OR)

8	a)	Construct a PDA that accept the language generated by the following grammar. $S \rightarrow aB$ $B \rightarrow bA \mid b$ $A \rightarrow aB$ Show an ID for the string **'*abab*'** for the PDA generated.	CO3	10 Marks
	b)	Analyze the PDA acceptance method "From Final state to Empty Stack."	CO2	4 Marks

UNIT-V

9	a)	Design a Turing Machine M to implement the function 'multiplication' using the subroutine 'copy'.	CO4	10 Marks
	b)	Describe Multi stack machines.	CO1	4 Marks

(OR)

10		Design a Turing Machine "Parity Counter" that outputs 0 or 1, depending on whether the number of 1's in the input sequence are even or odd respectively.	CO4	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

CONTROL SYSTEMS

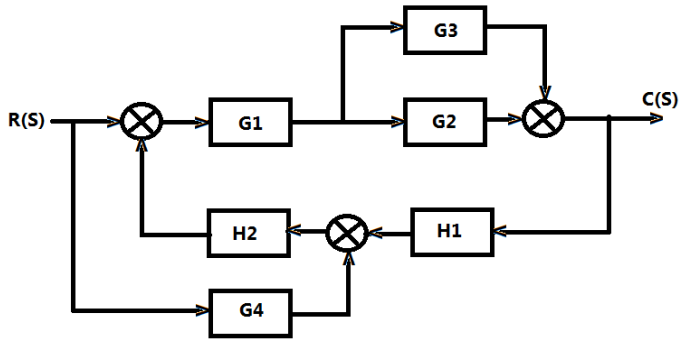
[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

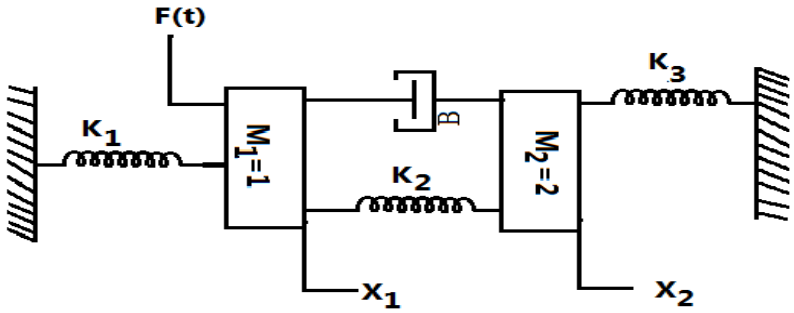
UNIT-I

1	a)	Differentiate open loop, closed loop systems and what is the effect of gain in a positive feedback system.	CO1	7 Marks
	b)	Determine the overall transfer function of the following system using block diagram reduction method.	CO4	7 Marks



(OR)

2		Obtain the transfer function for the given mechanical system and draw the force-voltage and force-current analogous electrical circuits and verify by using mesh and node equations.	CO4	14 Marks



UNIT-II

3	a)	Sketch the transient response of second order system and derive the expression for rise time, peak over shoot.	CO2	7 Marks
	b)	For the following feedback control system determine K_p, K_v, K_a and the steady state error in terms of error coefficients	CO2	7 Marks

$$G(s) = \frac{k}{s(1+s)(2+s)}, \quad r(t) = 2 + t + t^2/2$$

(OR)

4	a)	Sketch the construction of root loci for the given loop transfer function.	CO2	10 Marks

$$G(s) = \frac{k}{s(s+1)(s+3)}$$

	b)	Discuss the effect of addition of poles and zeros to the open loop transfer function.	CO1	4 Marks

UNIT-III

5	a)	Explain the procedure for constructing Bode plot.	CO1	7 Marks
	b)	Sketch the polar plot for the transfer function given below. Determine whether the plot crosses the imaginary axis. If so, determine the frequency at which the plot crosses the real axis and the corresponding magnitude | G(jω)|. $$G(s) = \frac{1}{(1+s)(1+2s)}$$	CO5	7 Marks

(OR)

6		Sketch the Bode plot showing the magnitude in dB and phase angle in degrees as a function of log frequency for the transfer function $G(s) = \frac{Ks^2}{(1+0.25s)(1+0.025s)}$. Determine the system gain K for the gain cross over frequency to be 5 rad/sec.	CO5	14 Marks

UNIT-IV

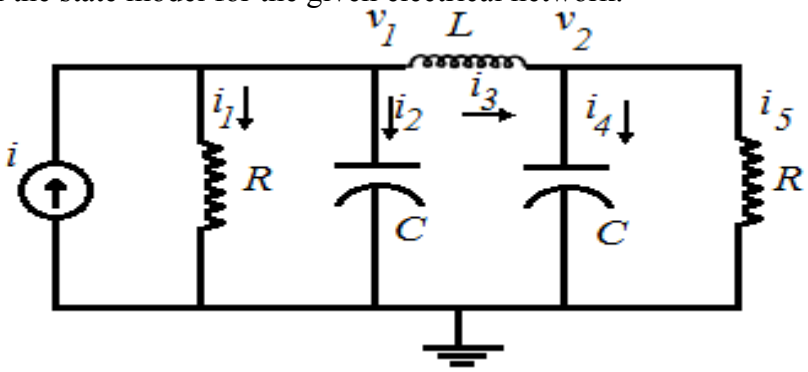
7	a)	Explain the procedure for designing a Lead compensator.	CO1	7 Marks
	b)	Explain the effect of PI controller on time response characteristics.	CO1	7 Marks

(OR)

8		The open loop transfer function of a unity feedback control system is given by $G(s) = \frac{K}{s(1+0.5s)(1+0.1s)}$. Compensate the system to meet the following specifications: $K_v \geq 25\ S^{-1}$; Phase margin $\phi_{pm} = 60^0$ and band width $\omega_b = 10$ rad/sec.	CO3	14 Marks

UNIT-V

9		Obtain the state model for the given electrical network.	CO2	14 Marks



(OR)

10	a)	Explain the concept of controllability and observability.	CO1	7 Marks
	b)	Test the controllability and observability of the system described by $\begin{bmatrix}\dot{x}_1\\ \dot{x}_2\end{bmatrix} = \begin{bmatrix}1 & 1\\ -3 & -2\end{bmatrix}\begin{bmatrix}x_1\\ x_2\end{bmatrix} + \begin{bmatrix}0\\ 1\end{bmatrix}u, y = \begin{bmatrix}1 & 0\end{bmatrix}\begin{bmatrix}x_1\\ x_2\end{bmatrix}$.	CO4	7 Marks

CODE No.:16BT51202 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular Examinations May - 2018

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is the difference between Architectural modeling and Behavioral modeling?	CO1	7 Marks
	b)	Explain about the unified process.	CO1	7 Marks
		(OR)		
2	a)	Discuss the role of analysis in the software lifecycle of unified software development process.	CO1	7 Marks
	b)	Briefly explain the UML relationships with examples.	CO1	7 Marks

UNIT-II

3	a)	Construct the class diagram for dish washer. Identify the attributes and methods of a dish washer object.	CO2	7 Marks
	b)	What is difference between class diagram and object diagram?	CO2	7 Marks
		(OR)		
4	a)	How would you define the class hierarchy (Hint: utilize the inheritance capability of an object oriented system) following the characteristics: i) Alcoholic drinks are not for drivers or children. ii) Non-alcoholic drinks are thrust quenching. iii) Wine is made of grapes and adults only. iv) Grape juice is made from grapes and has the taste of a fruit. v) Mineral water is a bubbling and does not taste like a fruit. vi) Lemonade is bubbling and tastes like a fruit.	CO1	7 Marks
	b)	Construct and explain the class diagram for library management system.	CO2	7 Marks

UNIT-III

5	a)	Explain about the Usecase driven process.	CO3	7 Marks
	b)	Construct the interaction diagrams for railway reservation.	CO3	7 Marks
		(OR)		
6	a)	Construct the Usecase diagram for GATE application.	CO3	7 Marks
	b)	Construct the activity diagram with swim lanes for hospital management system.	CO3	7 Marks

UNIT-IV

7	a)	What is difference between Activity diagrams and State chart diagrams?	CO4	7 Marks
	b)	Write about Events, Signals, Time and Spaces, Processes and Threads.	CO4	7 Marks
		(OR)		
8		Construct the state chart diagram following the given problem. Consider a payroll program that processes employee records at a small manufacturing firm. The company has several classes of employees with a particular payroll requirements and rules for processing each. This company has 3 types of employees. i) Mangers receive a regular salary. ii) Office workers receive an hourly wage and are eligible for over time after 40 hours. iii) Production workers are paid according to a piece rate.	CO4	14 Marks

UNIT-V

9	a)	Explain about the forward and reverse engineering.	CO5	7 Marks
	b)	Explain about the modeling executable files and libraries and tables, files and documents.	CO5	7 Marks

(OR)

10	a)	Construct the implementation diagrams for via net bank.	CO5	7 Marks
	b)	Explain about the physical database and adaptable systems.	CO5	7 Marks

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

PROBABILITY AND STATISTICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is meant by random experiment? Illustrate using examples.
b) Two dice are tossed. Let X assign to each point the sum of the outcomes on the two dice. Find the probability distribution of X. Find the mean and the variance of the distribution.

2. a) For a probability distribution F(x), show that
i) $P(a < X \leq b) = F(b) - F(a)$
ii) $0 \leq F(x) \leq 1$
iii) $x < u \Rightarrow F(x) \leq F(u)$
b) What is Normal distribution? What are its properties?

3. a) Obtain correlation coefficient between the heights of father (X) and of the son (y) for the following data:

X	65	66	67	68	69	70	71	67
Y	67	68	64	72	70	67	70	68

b) What are regression lines and coefficients? What are their properties?

4. a) What is meant by simple random sampling?
b) Suppose we have a population of size 5, consisting of: 6, 8, 10, 12 and 14.Taking simple random samples of size 2 with replacement, find the mean and variance of the population

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. Two sample polls of votes for two candidates A and B for a public office are taken, one from residents of rural ares and other from residents of urban area. Examine whether the nature of the area is related to voting preference in the election

	Vote for		
Area	A	B	Total
Rural	620	380	1000
Urban	550	450	1000
Total	1170	830	2000

7. a) What do you understand by Statistical Quality Control? Discuss briefly its need and utility in industry. What are the causes of variation in quality?
b) What is Control chart? Explain the basic principles underlying the Control Charts.

8. A local bank has only one server. Customers arrive at the bank at the rate of 45 customers per hour and the mean service rate of the servers is 60 customers per hour. Arrivals are Poisson where as service times are exponentially distributed. For a one minute period find out:
i) The probability that there are no customers in the bank
ii) The average number of customers in the waiting line
iii) The average number of customers in the bank
The probability that an arriving customer has to wait for service.

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CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

OPTIMIZATION TECHNIQUES

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Classify the optimization problems.
b) Illustrate any two engineering applications of optimization.

2. a) Determine the extreme points of the function $\mathbf{f(x) = 12x^5 - 45x^4 + 40x^3 + 5}$.
b) Give the necessary conditions to find the minimum of a function $f(x, y)$ subject to $g(x_1, x_2)$ using lagrange multiplier method.

3. a) Explain the simplex method of solving linear programming problem.
b) Reduce the following systems of equations into a canonical from with x_1; x_2 and x_3 as basic variables.

$$2x_1 + 3x_2 - 2x_3 - 7x_4 = 1$$
$$x_1 + x_2 + x_3 + 3x_4 = 6$$
$$x_1 - x_2 + x_3 + 5x_4 = 4.$$

4. Solve the following assignment problem.

	Time (Hours)			
	Job 1	Job 2	Job 3	Job 4
Machine 1	14	5	8	7
Machine 2	2	12	6	5
Machine 3	7	8	3	9
Machine 4	2	4	6	10

5. a) Find the minimum of the function $f = \lambda^5 - 5\lambda^3 - 20\lambda + 5$ by Fibanacci search in the internal (0, 5). Take total number of experiments as 8.
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. Consider the minimization of the function $\boldsymbol{f(x_1; x_2) = 6x_{21} + 2x_{22} - 6x_1x_2 - x_1 - 2x_2}$.
If $S_1 = \begin{Bmatrix} 1 \\ 2 \end{Bmatrix}$ denotes a search direction, find a direction S_2 which is conjugate to the direction S_1.
(Use Powell's method).

7. Use Interior Penalty function method to minimize $f(x_1, x_2) = \frac{1}{3}(x_1 + 1)^3 + x_2$

Subject to $g_1(x_1, x_2) = -x_1 + 1 \leq 0$
$g_2(x_1, x_2) = -x_2 \leq 0$

8. a) What is dynamic programming? Explain its optimality criterion.
b) Explain the calculus method of solution with an example.

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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 December - 2017

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) What is a manometer? How they are classified?

2. a) Distinguish between:
i) rotational and irrotational flow.
ii) laminar flow and turbulent flow.
b) What is Euler's equation of motion? How will you obtain Bernoulli's equation from it?

3. a) Explain the terms hydraulic gradient and total energy lines. Why are the pipes connected in parallel?
b) What do you understand by pipes in series, pipes in parallel and equivalent pipe?

4. a) Explain the significance of word 'free' in Impact of free jets.
b) Derive an expression for the force exerted by the jet on a moving flat plate.

5. a) What do you understand by mass inflow curve and how is it prepared?
b) A turbine develops 9000 kW power when running at 100 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.

6. a) What do you mean by gross head, net head and efficiency of a turbine? Explain the different types of efficiencies of a turbine.
b) Draw a neat sketch of a Francis turbine and explain the functions of each component.

7. a) Define the specific speed of a turbine. Derive an expression for the specific speed. What is significance of the specific speed?
b) What are the uses of a draft tube? Describe different types of draft tubes with neat sketches.

8. a) Define a centrifugal pump. Explain the working of a single-stage centrifugal pump with sketches.
b) The internal and external diameters of the impeller of a centrifugal pump are 300mm and 600mm respectively. The pump is running at 1000 r.p.m. The vane angles at inlet and outlet are 20^0 and 30^0 respectively. The water enters the impeller radially and velocity of flow is constant. Determine the work done by the impeller per unit weight of water.

CODE No.:10BT40101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

STRUCTURAL ANALYSIS - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. The stresses at a point in a bar are 250N/mm^2 (tensile) and 125N/mm^2 (compressive). Determine the resultant stress in magnitude and direction on a plane inclined at 60^0 to the axis of the major principal stress. Also determine the maximum intensity of shear stress in the material at the point.

2. A beam of span 6m is simply supported at the ends A and B. The beam is subjected to two point loads of 25kN each at a distance of 2m and 3m respectively from the left end A. Determine the position and magnitude of maximum deflection. Take E= 2 x 10^5 N/mm^2 and I = 7200 cm^4.

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. What are the assumptions made in the Euler's theory? Derive the Euler's critical load formula for long column with one end fixed and the other end hinged.

5. a) Derive expression for strain energy per unit volume in terms of three principal stresses.
b) A circular shaft of 100mm diameter is subjected to combined bending and twisting with bending moment equal to three times of the twisting moment. If the safe stress in direct tension is 100MPa, find the allowable twisting moment by various theories of failure. **μ = 0.3**

6. Determine the principal moments of inertia for an unequal 'L' angle section of size 60 x 40 x 6 mm.

7. Analyse the fixed beam shown in figure and draw shear force and bending moment diagrams. Find the distance of the points of contra-flexure from supports.

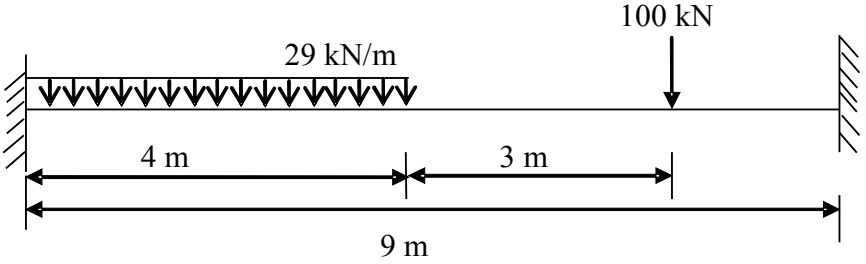

Fig.4

8. A continuous beam ABCD with three equal spans AB, BC and CD is loaded with uniformly distributed load **'w'** per unit length throughout the span. Find the support moments and draw shear force and bending moment diagrams.

CODE No.:10BT40102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

FLUID MECHANICS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish among different types of drag with the help of a neat sketch.

b) The velocity distribution in the boundary layer is given as $\frac{v}{V} = \frac{3}{2}\eta - \frac{1}{2}\eta^2$ in which $\eta = (y/\delta)$. Compute θ/δ.

2. a) Define most economical section of a channel and derive the conditions required for trapezoidal channel section.

b) Draw a neat sketch and explain specific energy curve.

3. a) Explain the term hydraulic jump. Derive an expression for the depth of hydraulic jump in terms of the upstream Froude number.

b) Briefly explain the classification of surface profiles.

4. a) 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 10mm thick and 200mm x 200mm size is hung such that it can swing freely about upper horizontal edge. A horizontal jet of water of 20mm diameter strikes the plate perpendicularly at 50mm 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. a) Classify turbines based on different criteria. How the classification based on specific speed is practically useful?

b) A 150mm diameter jet of water strikes the bucket of a Pelton wheel and is deflected through an angle of 165^0 by the buckets. Head available at the nozzle is 350m. Taking coefficient of velocity as 0.96, speed ratio as 0.46 and loss of velocity of jet due to friction, while passing through the buckets as 12%, find the power developed by the machine.

6. a) Explain different unit and specific quantities. Under what conditions are they useful?

b) A turbine operates under a head of 32m at 250 r.p.m. If the discharge is 9 cumec and efficiency is 90%, calculate power generated by the turbine and its specific speed.

7. a) Derive an expression for the work done by a centrifugal pump on water per second per unit weight.

b) A centrifugal pump rotating at 100 r.p.m delivers 160 lps of water against a head of 30m. The pump is installed at a place where atmospheric pressure is 1×10^5 Pa. (abs) and vapour pressure of water is 3 kPa.(abs). The head loss in suction pipe is equivalent to 0.2m of water. Calculate minimum NPSH.

8. a) What are the different types of hydropower plants? Explain each one briefly.

b) Explain the terms load factor, plant factor and utilization factor.

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CODE No.:10BT40104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

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 briefly about various types of Ashlar Masonry with neat diagrams.
b) Describe the Strap and Mat footings.

2. a) What are the different types of Stair cases? Explain with the help of figures.
b) Explain the classification of roofs.

3. a) State the types of termites. Explain the anti termite treatment.
b) Explain the important types of paints.

4. a) What do you mean by organization and give different types of organizations.
b) Explain the project organization for any project manager's authority.

5. a) Explain the objectives of Material Management and their costs.
b) Explain the Earth Moving equipment and Earth Compaction equipment.

6. a) Explain the methods of planning and programming problems.
b) Explain the Milestone charts.

7. a) Explain the modes of network construction.
b) A project consists of eight events having predecessor relationships as under.

Event	Immediate predecessor	Event	Immediate predecessor
10	-	50	30,40
20	10	60	30,50
30	10	70	60
40	20,30	80	40,70

Construct the network.

8. From the data given in table, prepare the network diagram, decide the completion period and the critical path schedule.

Activity item	Duration in Days	Activities immediately	
		Preceding	Following
A	4	None	C,D
B	5	None	D
C	7	A	E,F
D	6	A,B	G
E	8	C	None
F	5	C	None
G	6	D	None

CODE No.:10BT40202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

ELECTRO MAGNETIC FIELDS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the expression for the electric field intensity due to infinite sheet of charge.
b) State and explain Gauss law.

2. a) Explain in detail about 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 conditions at a boundary between two dielectrics.
b) State Ohm's law in paint form.

4. a) State and explain Biot-Savart's Law.
b) Derive an expression for magnetic field intensity at a point along the axis, due to a circular current carrying loop.

5. a) Explain about Magnetic dipole and Dipole moment.
b) Derive the expression for torque on a current loop placed in a magnetic field.

6. Explain the concept of scalar and vector magnetic potential in detail.

7. Derive an expression for force between two straight long parallel current carrying conductors .What will be the nature of force if the current is carrying in the same direction and opposite directions?

8. Apply Gausses law to the differential Volume element and derive the expression for divergence in Cartesian coordinate system.

CODE No.:10BT40204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

ELECTRICAL MEASUREMENTS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the principle, construction and working of a PMMC instrument.
b) Explain the significance of controlling torque and damping torque relevant to the operation of indicating instruments.

2. a) Derive a general equation for deflection for a spring controlled repulsion type moving iron instrument. Comment upon the shape of the scale. Explain the methods adopted to linearize the scale.
b) A current transformer with 5 primary turns has a secondary burden consisting of a resistance of 0.16Ω and an inductive resistance of 0.12Ω. when the primary current is 200 A, the magnetizing current is 1.5 A and the iron loss current is 0.4 A, determine the number of secondary turns needed to make the current ratio 100:1 and also the phase angle under these conditions.

3. a) Explain two wattmeter method for measuring power in a balanced three phase circuit.
b) Explain the shape and scale of electro dynamometer wattmeter with help of neat sketch.

4. a) Explain the construction and working of maximum demand indicator.
b) Explain the procedure for testing energy meter by phantom loading using RSS meter.

5. a) Explain the procedure for calibration of ammeter using potentiometer.
b) Explain the applications of potentiometers.

6. a) What is the need for Kelvin's double bridge for measuring low resistance? Derive the balancing condition and write the expression for unknown resistance.
b) Explain any method for finding unknown resistance of very high resistance.

7. a) Deduce the condition for balancing the bridges in **ac** bridges.
b) Explain the working of Anderson's bridge with help of phasor diagram.

8. a) Explain the principle, construction and operation of a Ballistic Galvanometer.
b) Write short notes on Q-meter.

CODE No.:10BT40205

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

TRANSFORMERS AND INDUCTION MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the constructional details and types of single phase transformers.
b) Explain the operation of the transformer on load by using phasor diagram.

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 350W and 400W 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. a) Explain the working of scott connected transformers with phasor diagram.
b) Describe the poly phase transformer connections with suitable diagrams.

5. a) Explain the principle of operation of 3-phase induction motor with neat sketches.
b) Show that the maximum internal torque developed by a poly phase induction motor does not depend on the rotor circuit resistance and explain the torque slip characteristics.

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 e.m.f at full load is 2 Hz, find full load slip and speed.

7. a) Explain the tests performed to determine the circuit parameters of equivalent circuit of 3-phase induction motors.
b) Explain air-gap power, internal mechanical power developed and shaft power. Deduce a relationship between them.

8. How will you control the speed of an induction motor? Explain in detail.

CODE No.:10BT40301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

KINEMATICS OF MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between a structure and a machine.
b) Give sketches and brief descriptions of each of the three mechanisms derived from the double crank chain by fixing different links.

2. a) What is Pantagraph? Explain with neat sketch and state its applications.
b) Explain scot russell's mechanism with neat sketch.

3. The length of the crank and the connecting rod of a reciprocating engine are 100mm and 500mm respectively. The crank is rotating at 400 r.p.m.Using Klein's construction, Find i) Velocity of piston.
ii) Angular velocity of the C.R.
iii) Acceleration of piston when the crank has turned 30^0 from the inner dead centre.

4. a) What is double hook joint ? Explain.
b) Draw a neat sketch of Universal coupling and explain.

5. a) What is meant by the pressure angle of cam? Upon what factors does it depend?
b) State the procedure to the profile of a cam when the form of the displacement curve for the follower is known.

6. a) What are toothed gears? State their uses.
b) A point have 30 teeth drives a gear having 80 teeth. The profile of the gears is in volute with 20° pressure angle, 12mm module and 10mm addendum. Find the length of the path of contact and the contact ratio.

7. A Shaft rotating at 200 r.p.m drives another shaft at 300 r.p.m and transmits 6Kw through a belt. The belt is 100mm wide and 10mm thick. The distance between the shaft is 4m.The smaller pulley is 0.5m in diameter. Calculate the stress in the belt if it is an i) cross belt drive ii) open belt drive. Take coefficient friction is 0.3

8. a) What is an epicyclic gear train? In what manner does it differ from a simple or compound gear train?
b) A compound gear train consists of six gears. The number of teeth on each gear is as follows:

Gear	A	B	C	D	E	F
No. of teeth	60	40	50	25	30	24

Determine i) speed of the output shaft ii) output torque iii) holding torque.

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CODE No.:10BT40401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

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) What is the role of biasing in an amplifier? What are various types of biasing available?
b) State Miller's theorem. Specify its relevance in the analysis of a BJT amplifier.

2. Construct the Hartley oscillator. Explain the operation. Derive the condition for sustained oscillation.

3. Discuss the frequency response of BJT amplifier at low, mid and high frequencies and explain its significance in each region.

4. a) Explain the FET small signal Model.
b) Derive the voltage gain, input admittance and output admittance of common source amplifier at High Frequencies.

5. Draw the RC phase shift 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) What is the need for class AB operation of large signal amplifier?
b) Derive the power conversion efficiency of class C amplifier.

8. a) Draw the small signal model of MOSFET and derive the expression for voltage gain of common source amplifier with unbypassed source resistance.
b) Common Drain amplifier uses FET having r_d = 300 kΩ and μ =15. Calculate the output impedance and voltage gain for the load R_L = 300kΩ.

CODE No.:10BT40403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

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) Write the Maxwell's equation for electro static fields.
b) Obtain the expression for electric flux density on the axis of a uniform charged disc.

2. a) Define capacitance from the concept of electric field.
b) Derive an expression for capacitance per unit length between two infinitely long concentric conducting cylinders.

3. a) With the help of Ampere's work law, find the magnetic field in a closely wound toroidal coil.
b) A toroid has 1000 turns with its inner and outer radii of 10cm and 12cm respectively. If a current of 2 Amp produces a flux density of 2 Tesla in the core, find the relative permeability of the core.

4. a) Derive the equation of continuity for time varying fields.
b) A Parallel plate capacitor with a plate area of $5cm^2$ and plate separation of 3mm has a voltage 50 Sin 10^3t V applied to its plates. Calculate the displacement current assuming $\varepsilon = 2\ \boldsymbol{\varepsilon_0}$.

5. a) Show that Poynting vector P = E x H represents power flow for unit area.
b) Derive the propogation parameters of EM waves in good conductors.

6. a) Describe about linear and circular polarization.
b) Describe about reflection of plane waves by a perfect dielectric.

7. a) With justification, explain how minimum attenuation is obtained in transmission line.
b) What is meant by distortion in transmission lines? Obtain the condition to be satisfied to have distortion less transmission.

8. Explain the technique of the single stub matching and discuss the operation of the quarter wave transformer.

CODE No.:10BT40421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the analysis of a single stage CE amplifier using hybrid model.
b) For a common collector amplifier, the transistor parameters are h_{ic} = 1.2K Ω, h_{fc} = -101, h_{rc} = 1, h_{oc} = 25μA/V. Calculate R_i, A_I, A_V, R_o, A_{IS} and A_{VS}.

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) How the negative feedback effect on input and output resistances? Justify your statement with required derivations.
b) Draw the circuit of current shunt feedback and derive the expressions for input and output resistance.

4. a) Derive the expression for frequency of oscillations in the case of Wein-bridge oscillator circuit.
b) Explain the operation of Collpits oscillator circuit with suitable circuit diagram.

5. a) Discuss various types of distortions that exits in complimentary symmetry class B amplifier circuit.
b) Write short notes on Power Transistor Heat Sinks.

6. a) Derive an expression for the output voltage levels under steady state conditions of a low pass circuit excited by a ramp input.
b) State and explain clamping circuit theorem. Discuss about the practical clamping circuit with suitable sketches.

7. a) Explain the phenomenon of latching in a transistor.
b) Define the following for a transistor switch.
i) Rise time.
ii) Fall time.
iii) Storage time.
iv) Delay time.

8. a) Explain the operation of a collector coupled transistor monostable multivibrator with the help of neat circuit diagram and wave forms.
b) What is triggering? What are various ways in which a bistable multivibrator can be triggered? Explain.

CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

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. Explain Booth's multiplication algorithm with example.

2. a) What are register transfer logic languages? Explain few RTL statements for branching with their actual functioning.
b) Explain stack organization in detail.

3. Explain the design of micro program sequencer with logic truth table.

4. a) What is instruction pipeline? Explain about 4-segment instruction pipeline.
b) Discuss about Flynn's classification of computers.

5. Explain about the mapping techniques in the organization of cache memory.

6. a) What is a PCI bus? Explain.
b) Explain USB serial communication protocol.

7. a) Explain inter-processor arbitration.
b) Explain system bus structure for multiprocessor with a neat diagram.

8. Write about Power PC architecture in detail.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

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) Define object oriented programming. Differentiate procedural and object oriented programming.
b) Explain about constructors and destructors.

2. a) Develop an abstract Reservation class which has Reserve abstract method. Implement the sub-classes like ReserveTrain and ReserveBus classes and implement the same.
b) Explain the need of access specifier in inheritance and show the same with example for single inheritance using public, private and protected access specifiers and compare the difference in table.

3. a) What is the need of "this" keyword? Explain with an example.
b) What is garbage collection? Explain the use of finalize() method.

4. a) What is multiple inheritance? Explain how does Java support multiple inheritance.
b) Illustrate the difference between class and interface.

5. a) What is a package? Write a general form of a multileveled package statement.
b) Write a java program to implement Stack operations using packages.

6. a) Explain about demon threads in java.
b) Write short notes on java Applets.

7. a) Give the differences between panel and frame.
b) What is an adapter class? Describe about the Mouse adapter class.

8. a) Differentiate AWT and Swing components. Explain JFrame and JApplet components.
b) Discuss with JTree and JTable with suitable examples.

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

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 the parameter variation.
b) Draw the closed loop block diagram of DC motor armature speed control.

2. a) Obtain the transfer function of armature voltage control of a DC shunt motor.
b) Determine the signal flow graph for the following system $\frac{G(s)}{R(s)} = \frac{2.5(s+3)}{(s+10)^2(s+4)}$.

3. a) Discuss the unit step response of second order system.
b) For a system with, $GH(S) = \frac{5}{S+5}$, calculate the generalized error coefficients and the steady state error. Assume $r(t) = 6 + 5t$.

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. Develop Bode plot and state the stability of the system given $G(s) = \frac{80}{s(s+2)(s+20)}$.

6. Explain the Nyquist stability criterion with an example.

7. a) Draw the circuit diagram of a lag compensator and obtain its transfer function.
b) Describe the advantages and limitations of lead compensator.

8. a) What is a state transition matrix? List the properties of state transition matrix.
b) Determine the state controllability and observability of the system represented by the state equation.

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} -2 & 1 \\ 1 & -2 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 1 \\ 0 \end{bmatrix} [u]$$

$$y = \begin{bmatrix} 1 & -1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$$

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

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) Write an algorithm to find sum of 'n' numbers. Derive its Time Complexity and Space Complexity.

2. a) Explain the properties of connected components.
b) Explain the properties of biconnected components.

3. a) Explain the general method of Divide and Conquer.
b) Explain the Strassen's matrix multiplication concept with example.

4. a) Write Greedy algorithm to generate shortest path.
b) Define merging and purging rules of O/1 Knapsack problem.

5. Explain the process of solving the travelling salesman problem using dynamic programming strategy.

6. a) Explain the properties of strongly connected components.
b) Describe algorithm for Biconnected components and analyze its time complexity.

7. Describe detail about LC Branch and Bound solution.

8. State and Prove Cook's theorem.

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

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. Discuss the following.
i) Process control block. ii) Scheduling queues. iii) Threads.

3. a) What is critical section problem? What are the requirements to be satisfied for critical section problem to be solved.
b) Write about monitors for process synchronization.

4. Write in detail about deadlock detection and recovery.

5. Write a short notes on:
i) Demand Paging.
ii) Segmentation.

6. a) Explain file system structure.
b) Explain about file allocation methods.

7. a) How stable storage is implemented?
b) What are the services provided by the kernel I/O sub system?

8. a) What are the goals of protection?
b) What are program threats and authentication?

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

PROBABILITY AND STATISTICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove multiplication theorem.
b) If A and B are independent, show that A and B^C are also independent.

2. a) 20% of items produced from factory are defective. Find the probability that in a sample 5 chosen at random.
i) None is defective. iii) One is defective. iii) $p(1 < x < 4)$.
b) Find the mean and standard deviation of a normal distribution in which 7% of items are under 35 and 89% are under 63.

3. a) Obtain correlation coefficient between the heights of father (X) and of the son (Y) for the following data:

X	65	66	67	68	69	70	71	67
Y	67	68	64	72	70	67	70	68

b) What are regression lines and coefficients? What are their properties?

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) Before an increase in excise duty on tea, 800 people out of a sample of 1000 were consumers of tea. After the increase in duty, 800 people were consumers of tea in a sample of 1200 persons. Find whether there is significant decrease in the consumption of tea after increase in duty.
b) It is claimed that a random sample of 100 tyres with a mean life of 15269 is drawn from a population of tyres which has a mean life of 15200km and a S.D of 1248km. Test the validity of this claim.

6. a) Two random samples gave the following data:

	size	mean	variance
Sample I	8	9.6	1.2
Sample II	11	16.5	2.5

Can we conclude that the two samples have been drawn from the same normal population?
b) In a pre-poll survey out of 1000 urban voters 540 favoured B and the rest A. Out of 1000 rural voters, 620 favoured A and the rest B. Examine if the nature of the area is related to voting performance using the Chi-square test.

7. a) What do you understand by statistical quality control? Discuss briefly its need and utility in industry. What are the causes of variation in quality?

b) What is control chart? Explain the basic principles underlying the control charts.

8. a) Discuss queing theory. Explain its applications.

b) A TV repair man finds that the time spent on his jobs has an exponential distribution with mean 30 minutes. He repairs sets in the order in which they arrive. The arrival of the sets is approximately Poisson with an average of 10 per an either hour day. Find the repair man's idle time each day. How many jobs are ahead of the average set just brought in?

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

STRUCTURAL ANALYSIS - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A plane element is subjected to stresses as shown in Fig.1. Determine the Principal stresses, maximum shear stress and their planes. Use Mohr's Circle Method.

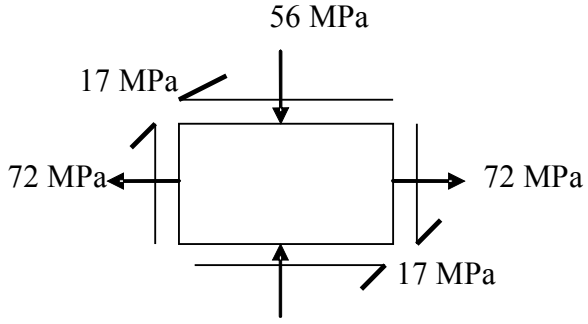

Fig.1

2. A beam AB of span 6m is simply supported at the ends. The beam is subjected to a concentrated load of 5 kN at a distance of 2m from left support A. The beam is also loaded with a uniformly distributed load of 3kN/m from the centre of span to right end B. Find the deflection at centre of span and slope at the left end A. Take E = 2×10^5 N/mm^2 and I = 2100 cm^4.

3. A cantilever 3m long has moment of inertia 800cm^4 for 1m length from the free end, 1600cm^4 for the next 1m length 2400cm^4 for the last 1m length. At the free end a load of 10 kN acts on the cantilever. Determine the slope and deflections at the free end of the cantilever. Take Young's modulus E=210GN/m^2.

4. Sketch the BMD and SFD for the fixed beam AB of span 10m, subjected to a concentrated load of 15kN at mid span. The flexural rigidity of the middle half span is half that of the remaining span (EI).

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 10kN.m and twisting moment of 8kN.m. The safe stress in direct tension is 200 MPa and $\mu = 0.3$

6. Determine the principal moments of inertia for an unequal 'L' angle section of size 60x40x6 mm.

7. Determine the shear center of a cross section of uniform thickness 't' which is in the form of an arc of a circle of radius R making angle α at the center of arc. From this solution show that the same for a thin tube with pin hole is 2R.

8. A continuous beam ABCD with three equal spans AB, BC and CD is loaded with uniformly distributed load '**w**' per unit length throughout the span. Find the support moments and draw shear force and bending moment diagrams.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

FLUID MECHANICS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish among different types of drag with the help of a neat sketch.
b) Explain Laminar boundary layer, turbulent boundary layer and laminar sub layer.

2. a) Prove the statement " The maximum discharge from a circular cross section not under pressure, but occurs at a little less than full depth."
b) Explain the various types of flows in open channels.

3. a) Stating clearly the assumptions made, derive dynamic equation for a GVF in a wide rectangular channel.
b) A rectangular channel, 2.0m wide, carries a discharge of 1.5cumec. At a certain section of the channel depth of flow is 0.3m. Determine whether a hydraulic jump will occur and if so, find its height and loss of energy per kg of water.

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 delivers 0.056cumec with a velocity of a 24metres /sec and impinges tangentially on a vane moving in the direction of the jet with a velocity of 12metres/sec. The vane is so shaped that if stationary it would deflect the jet through an angle of 45º. Through what angle will the jet be actually deflected? What driving force will be exerted on the vane in the direction of motion?

5. a) With the help of neat diagram, explain the construction and working of a Pelton wheel turbine.
b) What is a draft tube? Why is it used in a reaction turbine? What are the uses of a draft tube? What are the different types of draft tubes?

6. a) Define specific speed of a turbine and derive an expression for the same.
b) Define the term 'Governing of a turbine'. Describe with a neat sketch, the working of a Governor.

7. a) Explain the working of a single-stage centrifugal pump with a neat sketch.
b) A centrifugal pump delivers water against a net head of 14.5m and a design speed of 1000 r.p.m. The vanes are curved back to an angle of 30° with the periphery. The impeller diameter is 300mm and outlet width is 50mm. Determine the discharge of the pump, if manometric efficiency is 95%.

8. a) What do you understand by flow duration curve? How is it prepared? What is its practical application?
b) Explain Load factor, Utilization factor and Capacity factor. What are their practical applications?

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CODE No.:10BT40104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

CONSTRUCTION, PLANNING AND PROJECT MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the various joints in Stonemasonary.
b) Write in detail the objects of foundations and essential requirements of a good foundation.

2. a) Explain any three types of sloped roofs with sketches.
b) Enumerate the general requirements of a good stair case.

3. a) Explain the methods of damp proofing for walls, basements, floorings and roofs.
b) What is paint? Explain briefly different types of paints.

4. a) Enumerate the merits and demerits of different types of organizations.
b) Discuss about Workmen's compensation Act of 1923 and Minimum wages Act of 1948.

5. a) Explain ABC classification of materials and Inventory of materials.
b) Explain 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 given in table, prepare the network diagram, decide the completion period and complete the critical path schedule.

Activity Item	Duration in Days	Activities Immediately	
		Preceding	Following
A	8	None	B, C
B	10	A	C, D, E, H
C	7	A, B	D
D	4	B, C	F, H
E	2	B	G, H
F	9	D	I
G	12	E	I
H	1	B, D, E	I
I	5	F, G, H	None

CODE No.:10BT40202 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

ELECTRO MAGNETIC FIELDS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the expression for the electric field intensity due to an infinite line charge.
b) Derive the expression for the energy density in electrostatic field.

2. a) State and prove Gauss's law.
b) Using Gauss's law, find E at any point due to long infinite charge wire.

3. a) Explain Ohm's law in point form.
b) Derive the expression for capacitance of a coaxial cable.

4. a) State and explain Biot-Sarvart's law.
b) Derive an expression for magnetic field intensity at a radial distance R due to an infinite conductor carrying a current I.

5. a) State Ampere's law and explain how it can be applied to infinite sheet of current.
b) Determine the current density associated with the magnetic field.

$$\overline{H} = 5r\overline{a}_{\rho} + 3r\overline{a}_{\phi} + 7\overline{a}_{z}\ A/m$$

6. Explain in detail about scalar and vector magnetic potentials.

7. a) Explain the terms self and mutual inductance of an inductive circuit.
b) Derive the Neumanns formulae.

8. a) State and explain Faraday's laws of electromagnetic induction.
b) Write about four Maxwell's equations in integral form for time varying fields.

CODE No.:10BT40205

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

TRANSFORMERS AND INDUCTION MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the constructional details and types of single phase transformers.
b) Explain the operation of the transformer on load by using phasor diagram.

2. a) Develop the exact equivalent circuit of a single phase transformer and describe the necessary tests to determine the constants of the equivalent circuit.
b) A 100kVA transformer with unity power factor has a full-load loss of 3kW, the losses being equally divided between iron and copper. During a day, the transformer operates on full-load for 3 hours, half-load for 4 hours and negligible load for the remaining day. Calculate the All-day efficiency.

3. a) Explain the procedure to conduct Sumpners test on single phase transformers.
b) Discuss the necessary conditions for the parallel operation of two transformers.

4. a) What are three winding transformers? Explain them indicating the importance of each winding.
b) What is meant by Scott connection of transformers? Explain their significance.

5. a) Describe the constructional details of three phase wound type induction motors with neat sketches.
b) Explain the principle of operation of 3Φ induction motors. What are the operational similarities between transformers and induction motors?

6. a) Explain torque-slip and torque-speed characteristics of three phase induction motors.
b) A 6-pole, 50Hz, 3Φ induction motor develops a maximum torque of 30N-m at 960 r.p.m. Determine torque exerted by the motor at 5% slip. The resistance per phase is 0.6Ω.

7. a) Explain the starting methods of 3Φ induction motors.
b) Find the ration of starting current to full load current for a 10kW, 400V 3Φ induction motor with a star-delta starter if the full load efficiency is 0.86, the full load power factor is 0.8 and short circuit current is 30A at 100V.

8. Discuss various speed control methods of 3Φ induction motor.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

KINEMATICS OF MACHINERY

[Mechanical Engineering]

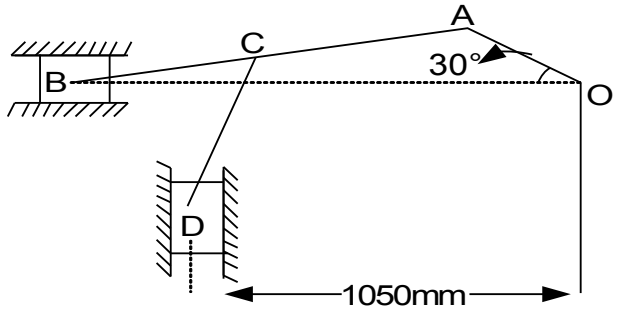
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is Kinematic Link? Classify it.
b) Explain crank and slotted lever mechanism with neat sketch.

2. 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) What is centroid and axode? State and explain Kenedy's theorem.
b) In the mechanism as shown in the figure, the crank OA rotates at 20 r.p.m. anticlockwise and gives motion to the sliding blocks B and D. The dimensions of the various links are OA=300mm, AB=1200mm, BC=450mm and CD=450mm.
For the given configuration, determine.
i) The velocities of sliding at B and D.
ii) Linear acceleration of D.
iii) Angular acceleration of CD.



4. a) What is the condition for correct steering? Sketch and show the two main types of steering gears and discuss their relative advantages.
b) A car using Ackermann type steering gear as a wheel base of 2.7m and track of 1.4m. The track rod is 1.15m and each track arm is 0.14m long. The distance between the pivots of front stub axiles is 1.23m. If the car is turning to the right, find the radius of curvature of the path followed by the inner front wheel for the correct steering.

5. The following data relate to a cam profile in which the follower moves with uniform acceleration and deceleration during ascent and descent.
Maximum radius of cam = 25mm, roller diameter = 7.5mm, lift = 28mm,
offset of follower axis = 12mm towards right. Angle of ascent = 60^0, Angle of descent = 90^0,
Angle of dwell between ascent and descent = 45^0, speed of the cam = 200 r.p.m.
Draw the profile of the cam and determine the maximum velocity and the uniform acceleration of the follower during the outstroke and the return stroke.

6. a) Define the following:
i) Circular pitch. ii) Module.

b) A pinion having 30teeth drives a gear having 80teeth. The profile of the gears is involute with 20^0 pressure angle, 12mm module and 10mm addendum. Find the length of path of contact, arc of contact and the contact ratio.

7. a) Obtain an expression for the length of a chain.

b) Explain the phenomena of 'slip' and 'creep' in a belt drive.

8. a) What is an epicyclic gear train? In what manner does it differ from a simple or compound gear train?

b) A compound gear train consists of six gears. The number of teeth on each gear is as follows:

Gear	A	B	C	D	E	F
No. of teeth	60	40	50	25	30	24

Determine: i) Speed of the output shaft.
ii) Output torque.
iii) Holding torque.

CODE No.:10BT40303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

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 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) 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 drop forging.
b) Explain hydrostatic extrusion operation with a neat sketch. What are specific applications of the process?

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. Sketch and explain:
i) Electro discharge machining with advantages and limitations.
ii) Ultrasonic machining with advantages and limitations.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

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) Explain the effect of coupling and emitter bypass capacitor on the gain of a single stage amplifier.
b) Write various causes and results of phase and frequency distortions in transistor amplifier.

2. a) Derive expressions for overall voltage gain and current gain of two stage RC coupled amplifier.
b) List out the special features of Darlington pair and cascaded amplifiers.

3. Discuss the frequency response of BJT amplifier at low, mid and high frequencies and explain its significance in each region.

4. Draw the circuit of common gate MOSFET amplifier with resistive load, then with the help small signal model analyze the circuit.

5. a) Enumerate the effect of negative feedback on various characteristics of the amplifier.
b) An amplifier has an open loop gain of 90. When a negative feedback of feedback factor 0.6 is applied, calculate the overall gain.

6. a) Draw the equivalent circuit of a Quartz Crystal.
b) Derive the sustained frequency of oscillations for wein bridge oscillator.

7. a) Explain the working of transformer coupled class-A power amplifier with a diagram.
b) What is harmonic distortion and how it will be calculated?

8. a) Discuss the applications of tuned amplifiers.
b) Explain the need for stagger tuned amplifier.

CODE No.:10BT40403 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

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) Derive static electric field in terms of potential gradient.
b) Obtain the expression for stored energy density in electrostatic field.

2. a) Explain how Poisson's and Laplace equations are used to solve the electromagnetic problems with the help of an example.
b) Determine the capacitance of a charged sphere of radius 'R'.

3. a) State Ampere's circuital law.
b) Determine the force and the torque of the loop in the x-y plane with sides b_1 and b_2 carrying a current **I** lies in a uniform magnetic field $\mathbf{B} = \mathbf{a}_x B_x + \mathbf{a}_y B_y + \mathbf{a}_z B_z$.

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 and explain its significance.
b) Show that when a plane wave is incident on perfect conductor normally, the resultant wave is standing wave.

7. a) Derive an expression for input impendence of a transmission line terminated with a load of Z_R.
b) Characteristic Impendence of a uniform transmission line is 2KΩ/m at 800Hz and propagation constant is $0.054\angle 87^0$/m find the primary constants.

8. Write about the following:
i) Phase and Group velocity. ii) Stub matching.
iii) Loading of transmission lines. iv) Smith chart.

CODE No.:10BT40501 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

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. Explain Booth's multiplication algorithm with example.

2. a) With neat sketch, explain arithmetic logic shift unit.
b) Explain about logic micro operations in detail.

3. a) Write short note on nano programming.
b) With neat diagram, explain the design of control unit.

4. a) Define:
i) Hardware interlock.
ii) Operand forwarding.
b) Explain the various types of array processors.

5. a) Explain various types of ROM's.
b) What is DMA? Why does DMA have priority over the CPU when both request a memory transfer?

6. Explain IEEE -1394 standard serial communication protocol.

7. List and explain the interconnection structures to connect the memory and processors.

8. Write about Pentium-IV architecture in detail.

CODE No.:10BT40502 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

OBJECT ORIENTED PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the advantages of an Object Oriented Programming paradigm?
b) Explain the about various types of inheritance used in OOP.

2. Write about the following:
i) Operator overloading.
ii) Abstract class.
iii) Virtual function.

3. a) What is the need of "this" keyword? Explain with an example.
b) What is garbage collection? Explain the use of **finalize( )** method.

4. a) What is multiple inheritance? Explain how does JAVA support multiple inheritance.
b) Illustrate the difference between class and interface.

5. a) What is exception? How to handle exceptions in JAVA?
b) What is package? Explain with suitable example.

6. a) Explain about demon threads in JAVA.
b) Write short notes on JAVA Applets.

7. a) Give the differences between panel and frame.
b) What is an adapter class? Describe about the Mouse adapter class.

8. a) Describe about various components in Swing.
b) Explain about MVC architecture in Swings.

CODE No.:10BT50501 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Write down the DFS algorithm? Draw a Binary tree of depth 4, label the nodes with any suitable notations. Trace the nodes using DFS write down the sequences of nodes.

2. a) Write difference between BFS and DFS.
b) Explain the DFS algorithm with an example.

3. a) Write and explain the control abstraction for divide and conquer.
b) Suggest refinements to merge sort to make it in-place.

4. a) Write Greedy algorithm to generate shortest path.
b) Define merging and purging rules of O/1 Knapsack problem.

5. What is Dynamic Programming strategy? Explain and compare the Bottom-up and Top-down Dynamic Programming approaches. Also write the algorithm to solve all pairs shortest path problem.

6. a) Draw the state space tree for **m** coloring when **n = 3** and **m = 3**.
b) Write a recursive backtracking algorithm.

7. Describe detail about LC Branch and Bound solution.

8. Trace out one main difference between divide and conquer strategy and dynamic programming. List out two sorting algorithms which follow divide and conquer strategy.

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

OPERATING SYSTEMS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss operating system from user point of view and system point of view.
b) Distinguish between Batch Systems and Time-sharing systems.

2. a) Detail on the process state transition with a neat diagram.
b) Write about three common types of threading implementation.

3. a) What is race condition? Explain about critical section problem.
b) Explain role of semaphores for process synchronization.

4. a) Explain about banker's algorithm.
b) Explain the necessary conditions for deadlock prevention.

5. Write a short notes on:
i) Demand paging.
ii) Segmentation.

6. a) What are different types of files supported by an operating system?
b) Explain contiguous and indexed file allocation methods in detail.

7. Write in detail about different disk scheduling algorithms.

8. a) How access matrix can be used for providing protection?
b) Write and explain various misused methods of system threats.

CODE No.:14BT3BS03 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

PROBABILITY AND STATISTICS

[Civil Engineering, Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define the following with an example. 8 Marks
i) Mutually exclusive events.
ii) Classical definition of probability.
iii) Conditional probability.

b) If X and Y are any two random variables, then prove that 6 Marks
E(X + Y) = E(X) + E(Y) provided E(X) and E(Y) exist.

(OR)

2 a) State and prove addition theorem of probability for any two events A and B. 7 Marks

b) Let X denote the number of heads in a single toss of 4 fair coins. Determine 7 Marks
i) $P(X < 2)$ ii) $P(1 < X \leq 3)$

UNIT-II

3 a) Out of 800 families with 5 children each, how many would you expect to have 7 Marks
(i) 3 boys (ii) 5 girls (iii) either 2 or 3 boys (iv) atleast one boy ?
Assume equal probabilities for boys and girls.

b) If X is a poisson variate, then prove that mean = variance = λ. 7 Marks

(OR)

4 a) 20% of items produced from a factory are defective. Find the probability that in a sample of 5 chosen at random. 7 Marks
i) Name is defective ii) one is defective iii) $P(1 < x < 4)$.

b) 1000 students have written an examination that mean of test is 35 and standard deviation is 5. Assuming the distribution to be normal, find: 7 Marks
i) How many students marks lie between 25 and 40?
ii) How many students get more than 40?
iii) How many students below 20?

UNIT-III

5 a) Explain the term statistical quality control. Discuss its aspects and advantages. 7 Marks

b) Calculate the correlation coefficient for the following heights (in inches) of fathers (X) and their sons (Y). 7 Marks

X	65	66	67	67	68	69	70	72
Y	67	68	65	68	72	72	69	71

(OR)

6 a) Draw the mean and range charts from the following data and state your conclusions. 7 Marks

Sample No	1	2	3	4	5	6	7	8	9	10
Sample mean	12.8	13.1	13.5	12.9	13.2	14.1	12.1	15.5	13.9	14.2
Sample range	2.1	3.1	3.9	2.1	1.9	3.0	2.5	2.8	2.5	2.0

b) Show that the coefficient of correlation lies between – 1 and + 1. 7 Marks

UNIT-IV

7 a) Explain the various steps involved in testing of hypothesis with examples. 7 Marks

b) In a sample of 500 people in Tamilnadu 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 Two random samples reveal the following results. 14 Marks

Sample	Size	Sample mean	Sum of squares of deviation from the mean
1	10	15	90
2	12	14	108

Test whether the samples came from the same normal population.

(OR)

10 From the following data, find whether there is any significant liking in the habit of taking soft drinks among the categories of employees. 14 Marks

Soft drinks	Employees		
	Clerks	Teachers	Officers
Pepsi	10	25	65
Thumpsup	15	30	65
Fanta	50	60	30

CODE No.:14BT3HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

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)	Write note on public awareness on environmental studies.	7 Marks
	b)	Discuss the concept of World food problems.	7 Marks
		(OR)	
2	a)	Write short notes on deforestation.	7 Marks
	b)	Explain the importance of renewable energy sources.	7 Marks

UNIT-II

3	a)	Describe the process of ecological succession.	7 Marks
	b)	Explain briefly about the energy flow in the ecosystem.	7 Marks
		(OR)	
4	a)	Explain the role of biodiversity in addressing new millennium challenges.	7 Marks
	b)	Write a brief note on endemic, endangered and extinct species.	7 Marks

UNIT-III

5	a)	Discuss the effects and control measures of soil pollution.	6 Marks
	b)	Explain the different solid waste management methods.	8 Marks
		(OR)	
6	a)	What are the adverse effects of water pollution on living beings?	8 Marks
	b)	Explain about any **two** pollution case studies.	6 Marks

UNIT-IV

7	a)	What is the importance of environmental education among public?	7 Marks
	b)	Define Brundtland commission. Write a short note on sustainable development for a smart city.	7 Marks
		(OR)	
8	a)	Enumerate and discuss the effects of acid rains.	7 Marks
	b)	What are the salient features of forest conservation act?	7 Marks

UNIT-V

9		Explain the population growth and controlling methods in India.	14 Marks
		(OR)	
10	a)	Explain the necessity of value education.	7 Marks
	b)	Discuss about role of Information Technology on environment and human health.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

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	Does Mehrabian model of communication meet all the criteria listed for ideal communication? Explain.	14 Marks
	(OR)	
2	What are the psychological barriers to communication? List a few measures to overcome them.	14 Marks

UNIT-II

3	Discuss the role of cultural diversity in cross-cultural communication.	14 Marks
	(OR)	
4	Discuss the role of Non-verbal communication in a professional environment with special reference to Haptics and Kinesics.	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 on integrate technology into business presentation?	14 Marks

UNIT-V

9	Elaborate the process of setting the goal for a bright career with a focus on 'SMART'ness of the process.	14 Marks
	(OR)	
10	Give an account of the differences between Telephonic and Face-to-face interviews.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

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)	Explain how Gilligan view the three levels of moral development initiated by Kohlberg.	6 Marks
	b)	What is meant by professional conscience and right of conscientious refusal?	8 Marks
		(OR)	
2	a)	Briefly discuss about types of Inquires.	6 Marks
	b)	What is moral autonomy? What are skills to be possessed to become morally autonomous?	8 Marks

UNIT-II

3	a)	Briefly discuss about the qualities of professional practitioners.	6 Marks
	b)	Explain in detail the following terms: i) Moral Leadership ii) Ethical relativism.	8 Marks
		(OR)	
4	a)	Explain the role of ethical theories in resolving moral dilemmas.	8 Marks
	b)	Briefly discuss about Customs and Religion.	6 Marks

UNIT-III

5	a)	What are the aspects of in which engineering differs from standard experiments?	6 Marks
	b)	How are the rules and regulations to be constructed for responsible experimentation or safe execution by engineers?	8 Marks
		(OR)	
6	a)	State the industrial definition on “safety”.	6 Marks
	b)	Analyse the factual, conceptual and moral issues in the space shuttle “Challenger” case.	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)	What do you mean by hacking? Is it good or bad? Discuss.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

ELECTRICAL TECHNOLOGY

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain the procedure for conduction of Swinburne's test. 14 Marks

(OR)

2 Explain the construction and working principle of DC generator. 14 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, 50Hz supply. The net cross sectional area of the core is 60cm^2. The number of turns in the primary is 500 and in the secondary 100. Determine: 8 Marks

i) Transformation ratio.
ii) EMF induced in secondary winding.
iii) Maximum value of flux density in the core.

(OR)

4 a) Explain the procedure for performing the open circuit test on a transformer. 7 Marks

b) A 230V, 3kVA single phase transformer has an iron loss of 100W at 40Hz and 70W at 30Hz. Find the hysteresis and eddy current losses at 50Hz. 7 Marks

UNIT-III

5 Three equal star connected induction inductors take 10kW at power factor 0.8 when connected to a 440V, three phase, 3 wire supply. Give the connection diagram of two single phase watt meters to measure the power in the circuit. Allocate the reading of each wattmeter. Find the line currents if one of the inductors is short circuited. Draw the vector diagrams of the currents and voltages under the condition. 14 Marks

(OR)

6 a) Explain briefly the generation of three phase voltages. 6 Marks

b) Derive the expression for power in a three phase star connected system in terms of phase values and line values of voltages and currents. 8 Marks

UNIT-IV

7 a) Discuss the types of three phase induction motors in detail. 10 Marks

b) A three phase, 4 pole, 50Hz induction motor is running at 1455 r.p.m. Find slip speed and slip. 4 Marks

(OR)

8 a) Explain the classification of alternators. 7 Marks

b) A 4 pole, 50Hz star connected alternator has a flux per pole of 0.12Wb. It has 4 slots per pole per phase, conductors per slot being 4. If the winding coil span is 150^0, find EMF. 7 Marks

UNIT-V

9	a)	How the starting torque of single phase motor can be improved?	7 Marks
	b)	Explain the working principle of reluctance motor.	7 Marks

(OR)

10	a)	How does a universal motor run on AC and DC? Mention the applications of the motor.	7 Marks
	b)	Mention the applications of single phase motors.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

STRUCTURAL ANALYSIS - I

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 A plane element is subjected to stresses as shown in Fig.1. Determine the principal stresses, maximum shear stress and their planes. Use Mohr's Circle Method. 14 Marks

(OR)

2 A plane element is subjected to stresses as shown in Fig.2. Determine, analytically, the principal stresses, maximum shear stress and their planes. 14 Marks

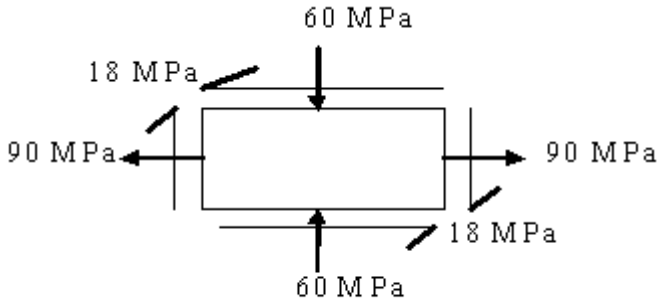

Fig.2

UNIT-II

3 Derive the expressions for slope and deflection of a cantilever of length 'L' and uniform 'EI' carrying a gradually varying load from zero at the free end to 'w' at the fixed end. Hence find the maximum values of its slope and deflection. 14 Marks

(OR)

4 A simply supported rectangular R.C beam of length 3m and cross section 100mm x 250mm is subjected to a central point load of 15kN. Find the maximum slope and deflection of the beam. Find the point load that can be placed centrally on the beam to cause a central deflection of 20mm. Take $E = 2 \times 10^4$ N/mm^2. 14 Marks

UNIT-III

5 A hollow cast-iron column whose outside diameter is 220mm and has a thickness of 20mm is 5.4m 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 $\mathbf{E_{cast\ iron}}$ = 107 GPa and Rankine's constant = 1/1650 for both ends pinned case and the crushing strength of the material as 565MPa. 14 Marks

(OR)

6 A 5m long circular column having fixed ends has 240mm external diameter and 20mm thickness. The column carries a load of 160kN at an eccentricity of 25 mm from its longitudinal axis. Determine (i) stresses in the extreme fibres of the cross-section and (ii) maximum eccentricity so as to have no tension anywhere in its cross section. The modulus of elasticity of the material is 82 GPa. 14 Marks

UNIT-IV

7 Analyse the propped cantilever beam shown in Fig.3 and draw shear force and bending moment diagrams. Also draw elastic curve. 14 Marks

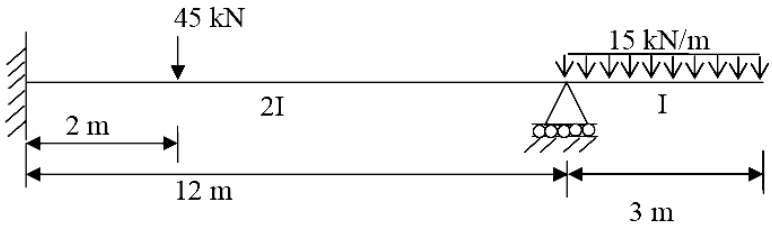

Fig.3

(OR)

8 A fixed beam is loaded as shown in Fig.4. Calculate the fixed end moments and deflection at mid-span of the beam. Take EI = 3000kNm^2. 14 Marks

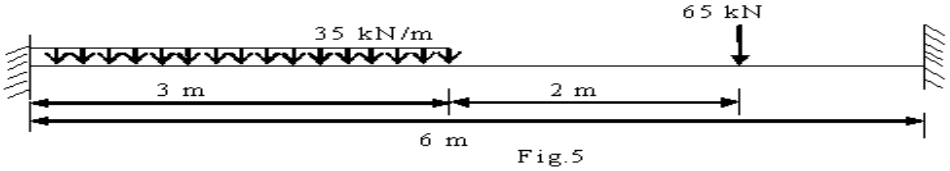

Fig.5

Fig.4

UNIT-V

9 A bolt is required to resist an axial tension of 45 kN and a transverse shear of 32 kN. Find the size of the bolt by the: 14 Marks

i) Maximum Principal Stress Theory.
ii) Maximum Strain Theory.
iii) Maximum Shear Stress Theory.

The stress at elastic limit of the material is 270MPa. Poisson's ratio = 0.29 and the factor of safety = 2.5.

(OR)

10 a) Derive the formula to find shear centre for a symmetrical channel section from first principles. 7 Marks

b) Find the approximate location of shear centre for a symmetrical channel section having overall depth of 260mm. Thickness of web and flanges is 20mm. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

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		Enumerate the differences between English bond and Flemish bond with neat sketches.	14 Marks
		(OR)	
2		Explain about the different types of masonry.	14 Marks

UNIT-II

3		What are the requirements of a good formwork? Describe the steps to be taken to effect economy in the expenditure on formwork.	14 Marks
		(OR)	
4	a)	What are the effects of fineness of sand and type of travel used on the final appearance of the plaster work on masonry walls?	7 Marks
	b)	What is pointing? What are various types of pointing? What is the procedure to be carried out in pointing?	7 Marks

UNIT-III

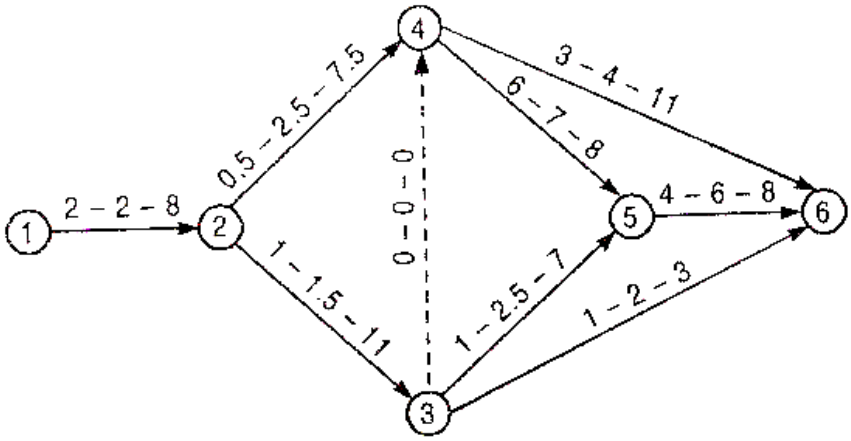
5		Discuss about the types of organization.	14 Marks
		(OR)	
6		What are the factors affecting cost owning and operating the equipment? Explain.	14 Marks

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	a)	Discuss about the resource allocation technique.	7 Marks
	b)	Describe the methods of resource allocation with illustrative examples.	7 Marks
		(OR)	
10		Consider the network shown below. The three time estimates for the activities are given along the arrows. Determine the critical path. What is the probability that the project will be completed in 20 days?	14 Marks


4
3 – 4 – 11
0,5 – 2,5 – 7,5
6 – 7 – 8
0 – 0 – 0
2 – 2 – 8
1
2
5
4 – 6 – 8
6
1 – 1,5 – 11
1 – 2,5 – 7
1 – 2 – 3
3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

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 20m long standardized at 55^0F with a pull of 10kg 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 16kg. Weight of 1 cubic cm of steel = 7.86g. Weight of tape = 0.8kg and E = 2.109×10^6 kg/cm^2. Coefficient of expansion of tape per 1^0F = 6.2×10^{-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) Calculate the included angles of the following traverse and apply geometric checks 7 Marks

Line :	AB	BC	CD	DE	EA
Bearing :	75^0	137^0	194^0	245^0	$336^0 30'$

b) Write about temporary adjustments for a dumpy level. 7 Marks

(OR)

4 a) Explain the characteristics of contours with neat sketches. 7 Marks

b) The following staff readings were taken with a 4m staff on a continuously sloping ground with staff held at regular intervals of 50m. 7 Marks

0.785, 1.340, 1.780, 2.600, 3.100, 3.745, 1.235, 1.850, 2.540, 3.650, 0.750, 1.440, 1.900.

Calculate the gradient of the line joining first and last point.

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, $202^0 38'$; C, $169^0 15'$; D, $158^0 36'$; E, $188^0 12'$. If the true forward bearing of AB is $36^0 26'$, 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) Explain the following. 6 Marks

(i) Anaiiatical lens. (ii) Inclined sights.

b) The following observations were taken on a staff held vertically at distances measured from the instrument. Find the mean value of the constant, given that the additive constant was 0.25m. 8 Marks

Observations	Horizontal distance in m	Vertical angle	Stadia readings	
1	60	0°0'	0.835	1.425
2	120	1°15'	1.140	2.345
3	180	1°40'	1.250	2.990

(OR)

8 a) Explain the following. 14 Marks

(i) Cubic spiral. (ii) Vertical curve. (iii) Reverse curve.

UNIT-V

9 a) Describe the field procedures of an EDM instrument for the measurement of a linear distance. 7 Marks

b) What is a digital level? How does the digital level measure the levels and horizontal distance using a bar code rod? 7 Marks

(OR)

10 a) Explain the operational procedure for a traverse survey using total station. 7 Marks

b) What are the advantages of a total station over conventional surveying instruments? 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December – 2017

FLUID MECHANICS – II

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Define displacement thickness, momentum thickness and energy thickness of a boundary layer and explain the effect of pressure gradient on boundary layer separation with a neat sketch. 14 Marks

(OR)

2 Explain the terms pressure drag, friction drag and total drag on a body. Calculate the diameter of a parachute to be used for dropping an object of mass 100kg so that the maximum terminal velocity of dropping is 5m/s. The drag co-efficient for the parachute, which may be treated as hemispherical, is 1.3. The density of air is 1.216kg/m^3. 14 Marks

UNIT-II

3 a) Derive dynamic equation for gradually varied flow. 7 Marks

b) When does a hydraulic jump occurs? Also give its applications. 7 Marks

(OR)

4 A trapezoidal channel with side slopes of one to one has to be designed to convey 12m^3/s at a velocity of 2.5m/s so that the amount of concrete lining for the bed and sides is the minimum. Calculate the area of lining required for one metre length of canal. 14 Marks

UNIT-III

5 A jet of water having a velocity of 35m/s impinges on a series of vanes moving with a velocity of 20m/s. The jet makes an angle of 30^0 to the direction of motion of vanes when entering and leaves at an angle of 120^0. Draw the triangles of velocities at inlet and outlet and find: 14 Marks

i) The angles of vanes tips so that water enters and leaves without shock.
ii) The work dine per unit weight of water entering the vanes.
iii) The efficiency.

(OR)

6 a) Derive the equation for force exerted by a jet on stationary inclined flat plate. 7 Marks

b) A jet of water 75mm in diameter having velocity of 22m/s strikes a series of the flat plates arranged around the periphery of a wheel such that each plate appears successively before the jet. If the plates are moving at a velocity of 5m/s, compute the force exerted by the jet on the plate, the work done per second on the plate and efficiency of the jet. 7 Marks

UNIT-IV

7 a) Under what headings the turbines can be classified? 7 Marks

b) A pelton wheel has to be designed for the following data: 7 Marks

Power to be developed = 6000kW; Net head available = 300m;
Speed = 550 r.p.m.; Ratio of jet diameter to wheel diameter = 1/10;
Overall efficiency = 85%.

Find the number of jets, diameter of the jet, diameter of the wheel and the quantity of water required.

(OR)

8 Give the classification of hydro power plants. 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

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

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) Check the properties (i) linear; (ii) Time-Invariance; (iii) Causality for the systems given below. 7 Marks

(1) $Y(t) = X(t)\cos(t+1)$; (2) $Y(n) = X(n) + 3u(n+1)$;

b) State and prove sampling theorem. 7 Marks

(OR)

2 a) Test whether the following systems are stable or not. 7 Marks

i) $Y(n) = \cos X(n)$ ii) $Y(n) = a^{X(n)}$

b) Determine the impulse response of the following casual system. 7 Marks

$Y(n) - Z\cos\theta\, y(n-2) + y(n-3) = X(n)$

UNIT-II

3 a) Design a constant K-LPF with cut-off frequency 4KHZ and with a terminating resistance of 1000Ω. 7 Marks

b) Design a band elimination filter having a characteristics impedance of 700Ω and cut of frequencies of f_1 = 3KHZ and f_2 = 6KHz. 7 Marks

(OR)

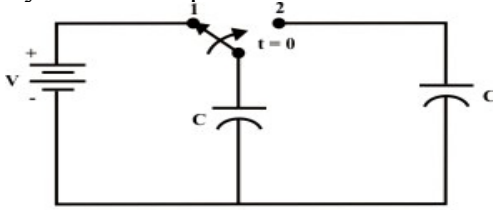
4 a) Design a filter that passes all frequencies above 50KHZ and to have a nominal impedance of 250Ω. Design a high pass T-section and π-section filter. 7 Marks

b) Derive the design equations for constant K low pass filter. 7 Marks

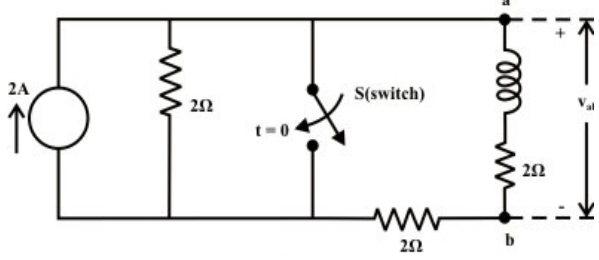
UNIT-III

5 a) Switch 'S' shown in figure is kept in position '1 'for a long time. When the switch is thrown in position ' 2 ', find at steady state condition; 7 Marks

i) The voltage across the each capacitor.
ii) The charge across the each capacitor.
iii) The energy stored by the each capacitor.

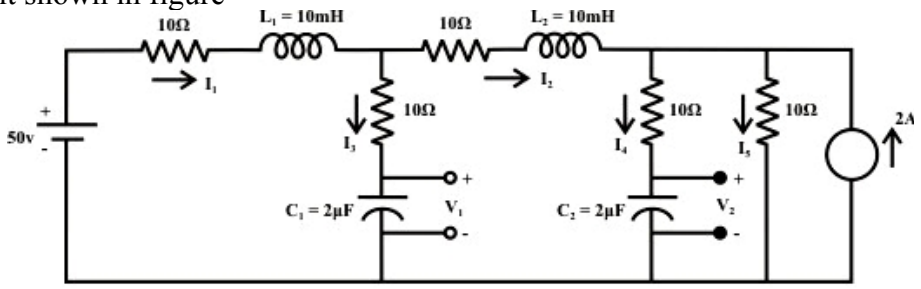


b) For the circuit shown in figure, find (i) $i_1(0^-)$, $i_L(0^-)$ (ii) $i_1(0^+)$, $i_L(0^+)$ 7 Marks

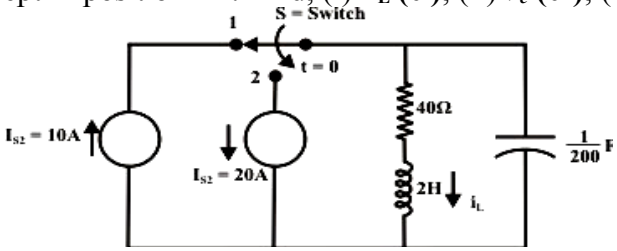


(OR)

6 a) At steady state condition, find the values of I_1, I_2, I_3, I_4, I_5, V_1 and V_2 for the circuit shown in figure — 7 Marks

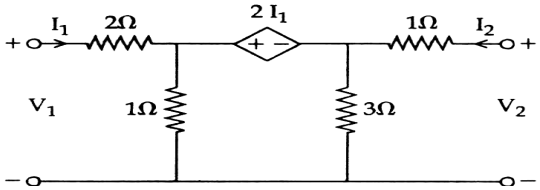


b) For the circuit shown in figure, the switch 'S' was in position '1' for a long time and then at it is kept in position '2'. Find, (i) $\mathbf{i_L\ (0^-)}$; (ii) $\boldsymbol{v_c}$ **(0⁺)**; (iii) $\boldsymbol{v_R}$ **(0⁺)**; — 7 Marks



UNIT-IV

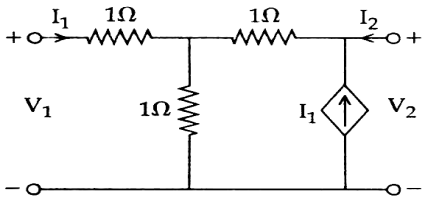
7 a) Find the Y parameters for the figure shown below. Find equivalent circuit using Y parameters and find whether the network is (i) reciprocal (ii) symmetrical. — 8 Marks



b) For a two-port network to be reciprocal, prove that AD-BC=1 where A, B, C, D are the network's transmission parameters. — 6 Marks

(OR)

8 a) For the circuit shown in figure, find z-parameters hence calculate the transmission parameters. — 8 Marks



b) Determine input and output impedances of a generalised network in terms of hybrid parameters. — 6 Marks

UNIT-V

9 a) How is a physical network realized by considering the driving point admittance function-discuss. — 4 Marks

b) Determine the Foster and Cauer form of realization if the driving–point Impedance function $Z(s)$ is given by $Z(s) = \dfrac{4(s^2+1)(s^2+9)}{s(s^2+4)}$. — 10 Marks

(OR)

10 a) Find the R-L network corresponding to the driving point impedance using Cauer form I and Cauer form II. $Z(s) = \dfrac{(s+4)(s+8)}{(s+2)(s+6)}$ — 9 Marks

b) Realize the function $F(s) = \dfrac{(s^2+1)}{s(s^2+2)}$ in Foster form I. — 5 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

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 factors to be considered while selecting hydro power plant? Explain the same.	5 Marks
	b)	Sketch and discuss the following: i) Mass duration curve. ii) Hydrograph. iii) Flow duration curve.	9 Marks
		(OR)	
2	a)	Explain the working of Francis turbine with a neat diagram.	7 Marks
	b)	Explain the selection of a hydro turbine based on head and specific speed.	7 Marks

UNIT-II

3	a)	What are the factors and environmental aspect to be considered for selection and of site for the TPS?	7 Marks
	b)	Explain with the help of a neat diagram, working of a feed water supply system.	7 Marks
		(OR)	
4	a)	Describe clearly the operation of Jet type and Surface type condensers. Which condenser is used in thermal power plants?	7 Marks
	b)	Compare the impulse and reaction turbines in thermal power plants.	7 Marks

UNIT-III

5	a)	What are the factors to be considered for the selection of site of a nuclear power station?	7 Marks
	b)	Explain with a neat sketch, various parts of nuclear power plant.	7 Marks
		(OR)	
6	a)	Explain PWR with neat sketches.	7 Marks
	b)	What are the advantages and disadvantages of BWR?	7 Marks

UNIT-IV

7	a)	By describing the essential components of a diesel power plant discuss its operation.	7 Marks
	b)	Mention the applications of diesel power plants.	7 Marks
		(OR)	
8	a)	Give the advantages and disadvantages of gas power plants.	7 Marks
	b)	Discuss the Impacts of renewable energy generation on environment.	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.1200×10^6; annual cost of fuel etc Rs.160×10^6;

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.

CODE No.:14BT40203 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

ELECTRICAL AND ELECTRONIC MEASUREMENTS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly discriminate the different torque produced in the measuring instruments.	7 Marks
	b)	A basic D'Arsonval movement with a full deflection of 50 micro amps and internal resistance of 500Ω is used as voltmeter. Formulate the necessary equation and calculate the value of multiplier resistance needed to measure a voltage range of 0-10V.	7 Marks
		(OR)	
2		Briefly describe the different types of errors considered in the measurements and give the ways of their compensation.	14 Marks

UNIT-II

3	a)	Explain different types of errors in PMMC instruments.	7 Marks
	b)	A 50V moving iron voltmeter has a resistance of 400Ω, made up of a copper coil of 40Ω and 80mH in series with a non-inductive resistance of 360Ω. Show how to connect a capacitor so that the instrument will read correctly on DC and AC. Calculate the value of capacitance required.	7 Marks
		(OR)	
4	a)	Classify electrodynamometers and explain any two with suitable diagrams.	7 Marks
	b)	Explain working and constructional details of three phase induction type energy meter.	7 Marks

UNIT-III

5	a)	Explain construction and working principle of current transformer.	7 Marks
	b)	A 1000/5 A, 50Hz current transformer has a secondary burden comprising a non inductive impedance of 1.6Ω.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 1.5W 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)	Explain the loss of charge method for measurements of insulation resistance of cables.	7 Marks
	b)	Draw the circuit of Kelvin double bridge used for measurement of low resistance and derive the condition for balance.	7 Marks

(OR)

8	a)	Explain measurement of frequency by Wien's bridge.	7 Marks
	b)	A wheatstone bridge has ratio arms of 1000Ω and 100Ω and is being used to measure a unknown resistance of 25Ω. Two galvanometers are available. galvanometer 'A' has a resistance of 50Ω and a sensitivity of 200mm/μA and galvanometer 'B' has values of 600Ω and 500mm/μA. Which of the two galvanometers is more sensitive to a small unbalance on the above bridge and what is the ratio of sensitivities? The galvanometer is connected from the junction of the ratio arms to the opposite corners.	7 Marks

UNIT-V

9	a)	Explain the horizontal deflection plates in an Oscilloscope.	7 Marks
	b)	Write short notes on CRO probes.	7 Marks

(OR)

10	a)	Explain the working of successive approximation type DVM with neat sketch.	8 Marks
	b)	A 4 ½ digital voltmeter is used for voltage measurements. Find: i) It's resolution. ii) How would 12.98V be displayed on a 10V range. iii) How would 0.6793V be displayed on 1V and 10V ranges.	6 Marks

CODE No.:14BT40204 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

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)	Draw the equivalent circuit of the transformer and explain each parameter.	7 Marks
	b)	The primary and secondary winding of 500kVA transformer has a resistance of 0.42Ω and 0.0011 Ω respectively. The primary and secondary voltages are 6.6kV and 400V respectively and iron loss is 2.9kW. Calculate the efficiency at full load 0.8 pf lagging.	7 Marks

(OR)

2	a)	Explain the construction and principle of operation of transformer.	7 Marks
	b)	A 2300V/230V single phase transformer has the primary and secondary winding resistance of 1 Ω and 0.01 Ω respectively. Its iron loss at normal supply voltage is 400W. Calculate the secondary current at which maximum efficiency occurs and also the maximum efficiency when the power factor of the load is 0.9.	7 Marks

UNIT-II

3	a)	Write a short note on All-day efficiency of the transformer.	4 Marks
	b)	Find the All-day efficiency of single phase transformer having maximum efficiency of 98 % at 15 kVA at UPF and loaded as follows. 12 hours - 2 kW at 0.5 power factor lagging 6 hours - 12 kW at 0.8 power factor lagging 6 hours - no load	10 Marks

(OR)

4	a)	What are the advantages of Sumpner's test? Give the related calculation to find the efficiency of a transformer.	7 Marks
	b)	Derive the equations for the currents supplied by each transformer when two transformers are operating in parallel with equal voltage ratios.	7 Marks

UNIT-III

5	a)	What are the various 3-phase transformer connections? Explain star-delta and open delta connections with neat diagrams.	7 Marks
	b)	Two electric furnaces are connected to two secondaries of scott-connected transformer set at a voltage of 80V which is supplied from a 3-phase 6600V system. The load on teaser is 480kW and on the main transformer is 720kW, both at 0.71power factor lagging. Calculate the currents in the lines on the input side. Neglect losses.	7 Marks

(OR)

6	a)	Explain the principle of 3-phase to 2-phase conversion using Scott connection.	7 Marks
	b)	Why is tap changing required for a transformer? Explain.	7 Marks

UNIT-IV

7	a)	Show that a 3-phase winding of a induction motor when excited by a 3-phase supply establishes a rotating magnetic field.	7 Marks
	b)	The full load power input to a 3-phase induction motor is 50kW and the slip is 3%. Neglecting stator losses, calculate the full load copper losses and total mechanical power developed.	7 Marks

(OR)

8	a)	Draw the speed *vs.* torque curves of slip ring induction motor whose rotor resistance is externally changed such that $R_3 > R_2 > R_1$.	6 Marks
	b)	A 3-phase 4 kW, 400V, 50 Hz, 4 Pole induction motor runs at 1440 r.p.m at rated load condition. Compute its efficiency at rated load condition, where the rotational losses are 400W and stator copper loss is equal to rotor copper loss.	8 Marks

UNIT-V

9		What is circle diagram? Explain the step by step procedure of drawing the circle diagram from the test data of a 3-phase induction motor and how to calculate its performance under different load conditions.	14 Marks

(OR)

10	a)	Explain auto transformer starting method of 3-phase induction motor.	7 Marks
	b)	The power input to a 3-phase induction motor is 60kW. The stator losses are 1kW. Find the mechanical power developed, and the rotor copper loss per phase if the motor is running with a slip of 3%.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

KINEMATICS OF MACHINERY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the terms: i) Lower pair ii) Higher pair iii) Kinematic chain iv) Inversion	4 Marks
	b)	Sketch and explain any two inversions of a double slider crank chain.	10 Marks
		(OR)	
2	a)	Explain Kutzbach criterion for the mobility of mechanism with a suitable example.	4 Marks
	b)	Define transmission angle of a four bar linkage. What is the effect of transmission angle on mechanical advantage?	4 Marks
	c)	Explain any two inversions of a four bar kinematic chain.	6 Marks

UNIT-II

3		The crank and connecting rod of a horizontal steam engine are 0.5m and 2m long respectively. The crank makes 180 r.p.m. in the clockwise direction. When it has turned 45^0 from the inner dead centre position, determine (i) velocity of piston (ii) angular velocity of connecting rod (iii) velocity of point E on the connecting rod 1.5m from the gudgeon pin.	14 Marks
		(OR)	
4		A link AB of four-bar linkage ABCD revolves uniformly at 120 r.p.m in a clockwise direction. The link AD is fixed. Find the angular acceleration of links BC and CD. Given : AB = 75 mm, BC = 175 mm, CD = 150 mm, DA = 100 mm and angle BAD = 90^0.	14 Marks

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		The following data relate to a cam profile in which the follower moves with uniform acceleration and deceleration during ascent and descent. Maximum radius of cam = 25mm, roller diameter = 7.5mm, lift = 28mm, offset of follower axis = 12mm towards right. Angle of ascent = 60^0, Angle of descent = 90^0, Angle of dwell between ascent and descent = 45^0, speed of the cam = 200 r.p.m. Draw the profile of the cam and determine the maximum velocity and the uniform acceleration of the follower during the outstroke and the return stroke.	14 Marks

(OR)

8 It is required to set out the profile of a cam to give the following motion to the reciprocating follower with a flat mushroom contact surface: (i) Follower to have a stroke of 20mm during 120^0 of cam rotation, (ii) Follower to dwell for 30^0 of cam rotation, (iii) Follower to return to its initial position during 120^0 of cam rotation, (iv) Follower to dwell for remaining 90^0 of cam rotation. The minimum radius of the cam is 25mm. The out stroke of the follower is performed with SHM and return stroke with equal uniform acceleration and retardation. 14 Marks

UNIT-V

9 a) State and prove the law of gearing. 8 Marks

b) Show that the involute curves as the profiles of mating gears satisfy the law of gearing. 6 Marks

(OR)

10 A compound gear train using spur gears is required to give a total reduction ratio of 250 to 1 in four steps. The modules of the gears are 5mm for the first step, 7mm for the second, 10mm for the third and 16mm for the fourth. 14 Marks

i) Arrive at the individual speed ratios, if a tolerance of ±0.2% is allowed in the total reduction ratio.

ii) Find the numbers of teeth of all gears, if the minimum number of teeth for any pinion is 20.

iii) Find the pitch circle diameters of all gears and the centre distances.

iv) Sketch a line diagram showing the gear train.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Define the terms: density, specific volume, specific gravity, vacuum pressure. 14 Marks

(OR)

2 Differentiate between simple manometers and differential manometers. Draw neat sketches of the manometers and explain. 14 Marks

UNIT-II

3 Define the equation of continuity. Obtain an expression for continuity equation for a three-dimensional flow. 14 Marks

(OR)

4 The water is flowing through a taper pipe of length 100m having diameters 600 mm at the upper end and 300mm at the lower end at the rate of 50 litres/sec. The pipe has a slope of 1 in 30. Find the pressure at the lower end if the pressure at the higher level is 19.62 N/cm^2. 14 Marks

UNIT-III

5 Two sharp ended pipes of diameters of 50mm and 100mm respectively each of length 100m are connected in parallel between two reservoirs which have difference of level of 10m. If friction factor for each pipe is 0.32, calculate: 14 Marks

i) rate of flow for each pipe.
ii) the diameter of a single pipe 100m long which would give the same discharge if it were substituted for the original two pipes.

(OR)

6 Prove that the efficiency of a series radial curved vane is 14 Marks

$$\eta = \frac{2(V_{w1}u_1 \pm V_{w2}u_2)}{V_1^2}$$

UNIT-IV

7 The Propeller reaction turbine of runner diameter 4.5m running at 48 r.p.m. The guide blade angle at inlet is 145^0 and the runner blade angle at outlet 25^0 to the direction of vane. The axial flow area of water through the runner is 30m^2. If the runner blade angle at inlet is radial, determine 14 Marks

i) Hydraulic efficiency of the turbine.
ii) Discharge through the runner.
iii) Power developed by the runner.

(OR)

8 A Francis turbine with an overall efficiency of 75% is required to produce 148.25 kW power. It is working under a head of 7.62m. The peripheral velocity = $0.26\sqrt{2gH}$ and the radial velocity of flow at inlet is $0.96\sqrt{2gH}$. The wheel runs at 150 r.p.m and the hydraulic losses in the turbine are 22% of the available energy. Assuming radial discharge at outlet, determine: 14 Marks

i) guide blade angle. ii) the wheel vane angle at inlet.
iii) diameter of the wheel at inlet. iv) width of the wheel at inlet.

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) Supplementary Examinations December - 2017

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)	Draw the ideal and actual indicator diagrams of a two stroke SI engine. How are they different from that of a four stroke cycle engine?	7 Marks
	b)	The Government of India has banned the production of new 2-stroke engines for two wheelers. Can you briefly comment on this statement technically?	7 Marks

(OR)

2	a)	Explain why 2- stroke diesel engines are preferable for marine applications. Discuss in detail.	7 Marks
	b)	Discuss the effect of disassociation and exhaust blow down on engine performance and emission characteristics.	7 Marks

UNIT-II

3	a)	Describe the various factors affecting flame propagation in SI engine combustion.	7 Marks
	b)	Differentiate knocking process in SI and CI engines.	7 Marks

(OR)

4		Explain the various combustion chambers of SI engines with respect to swirl, squish and tumble.	14 Marks

UNIT-III

5		A four-stroke cycle gas engine has a bore of 20cm and a stroke of 40cm. The compression ratio is 8. In a test on the engine the indicated mean effective pressure is 5 bar, the air to gas ratio is 5:1 and the calorific value of the gas is 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 disadvantages 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)	Discuss the relative advantages and disadvantages of Reciprocating and Centrifugal compressors.	7 Marks
	b)	Derive, starting from the fundamentals, an expression for adiabatic efficiency of a reciprocating compressor.	7 Marks

(OR)

10	a)	Explain the working principle of an axial flow compressor. Give its advantages and applications.	7 Marks
	b)	Discuss the effect of inter-cooling in multi-stage compressors.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

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 differences between Hot working and Cold working with their advantages and disadvantages.	7 Marks
	b)	Sketch the various rolling mill arrangements used in rolling and explain them briefly with simple diagrams.	7 Marks
		(OR)	
2	a)	Show the process of Forward Extrusion and Backward Extrusion by schematic sketches and explain briefly.	7 Marks
	b)	Distinguish between open die forging and closed die forging processes with neat sketches.	7 Marks

UNIT-II

3	a)	Describe various types of bending processes in sheet metal.	7 Marks
	b)	What is the difference between blanking and piercing? On what do you give clearance for blanking and piercing?	7 Marks
		(OR)	
4	a)	Distinguish between coining and embossing.	7 Marks
	b)	Describe various shearing operations in sheet metal work.	7 Marks

UNIT-III

5	What do you understand about Thermoforming and Thermosetting materials?	14 Marks
	(OR)	
6	Write a short notes on: i) Extrusion of plastics. ii) Blow moulding.	14 Marks

UNIT-IV

7	Describe all the elements of Water Jet Machining process and its working principle with a neat sketch.	14 Marks
	(OR)	
8	Explain the elements of Ultrasonic Machining process with a neat sketch. Also explain the process of Abrasive Jet Machining.	14 Marks

UNIT-V

9	Explain in detail the principle involved in Chemical Machining process with necessary diagram.	14 Marks
	(OR)	
10	Discuss about wire cut EDM process with a neat sketch.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

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)	Discuss the need for modulation.	6 Marks
	b)	An AM signal is of form: **$S(t)=10(1+0.5\cos 2000\pi t + 0.5\cos 4000\pi t)\cos(2\pi x10^6 t)$**. Sketch the amplitude spectrum and find Average power and Modulation index.	8 Marks
		(OR)	
2	a)	Explain the generation of the AM signal with switching modulator.	7 Marks
	b)	With neat block diagram, explain principle and operation of Costas loop.	7 Marks

UNIT-II

3	a)	Compare various AM techniques with respect to transmitter power and band width.	6 Marks
	b)	Explain the generation of SSB wave using phase discriminator method.	8 Marks
		(OR)	
4	a)	Explain how VSB signal can be demodulated by envelop detector.	8 Marks
	b)	Why do you prefer VSB modulation scheme in TV signals?	6 Marks

UNIT-III

5	a)	Derive the expression for a single tone FM signal in terms of Bessel function $J_n(\beta)$.	8 Marks
	b)	A modulating signal **$5\cos(30000\pi t)$** angle modulates a carrier voltage **$10\cos(8\pi x10^6 t)$**. Determine the bandwidth for FM signal, if K_f = 15KHz/volt. Also find K_p for PM assuming same bandwidth.	6 Marks
		(OR)	
6	a)	Describe the indirect method (Armstrong) of FM generation with suitable example.	8 Marks
	b)	An Angle modulated wave is described by **$\Phi(t) = 10\cos[3x10^6 \pi t + 10\cos 2000\pi t]$**. Calculate: i) Power of the modulated signal. ii) The maximum frequency deviation iii) The maximum phase deviation.	6 Marks

UNIT-IV

7	a)	Distinguish high level and low level AM transmitters. With neat block diagram, explain the principle and operation of high level AM transmitter.	7 Marks
	b)	With the block diagram, explain the principle and operation of super heterodyne receiver. Also discuss the criterion for selection of RF amplifier and IF frequency.	7 Marks
		(OR)	

8	a)	Illustrate the common scheme to study the noise performance of analog modulation systems.	7 Marks
	b)	Discuss Selectivity, Sensitivity, Noise margin and Fidelity of Radio receiver.	7 Marks

UNIT-V

9	a)	Distinguish between PAM, PWM and PPM signals with neat diagrams.	7 Marks
	b)	Explain the time division multiplexing system and mention its applications.	7 Marks

(OR)

10	a)	Describe the generation and demodulation of PWM signals.	7 Marks
	b)	Explain the need and operation of frequency division multiplexing with a neat diagram.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

ELECTRONIC CIRCUIT ANALYSIS AND DESIGN

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What do you mean by a multistage amplifier? Explain it briefly.	6 Marks
	b)	Draw the circuit diagram of a Darlington emitter follower and derive the expressions for its voltage gain and input resistance.	8 Marks
		(OR)	
2	a)	State the various methods of cascading transistor amplifiers.	7 Marks
	b)	With the help of a suitable circuit diagram, explain the working of a RC coupled amplifier.	7 Marks

UNIT-II

3	a)	Draw a small signal low-frequency model of a FET and explain its various elements.	8 Marks
	b)	Draw the frequency response of an amplifier and explain the reason for different for the different slopes in the response.	6 Marks
		(OR)	
4	a)	Draw the high frequency equivalent circuit for a FET amplifier. Derive the values of all the parameters.	9 Marks
	b)	Define $\mathbf{h_{fe}}$, $\mathbf{h_{oe}}$, $\mathbf{h_{re}}$, $\mathbf{h_{ie}}$ of a CE transistor.	5 Marks

UNIT-III

5	a)	Explain in detail about the different feedback topologies.	8 Marks
	b)	A transistor Colpitt's oscillator uses a tank circuit with L = 30mH, C_1 = 200 PF and C_2 = 200 PF. What is the frequency of oscillators?	6 Marks
		(OR)	
6	a)	Draw the circuit diagram of a current series feedback amplifier and derive expressions for voltage gain with and without feedback.	8 Marks
	b)	A three section RC phase shift oscillator has, R_C = 2KΩ, R = 10KΩ and C=0.01μF. What is the frequency of oscillation? If the oscillator is to be made variable, using the same values of R, what should be the tuning range of capacitors to obtain a frequency range of 10 KHz to 100 KHz.	6 Marks

UNIT-IV

7	a)	Draw the circuit for a push-pull amplifier and discuss its working.	7 Marks
	b)	Derive an expression for the efficiency of class B - power amplifiers.	7 Marks
		(OR)	
8	a)	Draw the circuit for commonly used class A - amplifier. If the amplifier draws 10W of **dc** power, what is the maximum **ac** power available to the load?	7 Marks
	b)	What is the basis for the classification of power amplifiers? Mention different types of power amplifiers.	7 Marks

UNIT-V

9		Draw the circuit of class-C Tuned amplifier. Explain its operation and derive that the efficiency of the amplifier is 100% making necessary assumptions.	14 Marks

(OR)

10	a)	Why parallel resonance circuits are used in tuned amplifiers? Explain.	6 Marks
	b)	Draw the equivalent circuit of capacitance coupled single tuned amplifier and derive the equation for voltage gain.	8 Marks

CODE No.:14BT40403 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

ELECTROMAGNETIC THEORY AND TRANSMISSION LINES

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the salient features and applications of Gauss's law.	7 Marks
	b)	Derive the expression for electric field due to volume charge density.	7 Marks
		(OR)	
2	a)	Define electric potential and give the relation between E and V.	7 Marks
	b)	Explain the following terms: i) Homogeneous and isotropic medium. ii) Line, surface and volume charge distributions.	7 Marks

UNIT-II

3	a)	Prove that isolated magnetic charge does not exist.	7 Marks
	b)	Derive the expression for force between two current elements.	7 Marks
		(OR)	
4	a)	Distinguish between scalar and vector magnetic potential.	7 Marks
	b)	Explain about magnetic energy.	7 Marks

UNIT-III

5	a)	Derive the boundary conditions for electric field for dielectric - conductors interface.	7 Marks
	b)	In a three - dimensional space, divided into region **1 ($x < 0$)** and region **2 ($x > 0$),** $\sigma_1 = \sigma_2 = 0$. $\vec{E}_1 = 1\vec{ax} + 2\vec{ay} + 3\vec{az}$. Find $\vec{E_2}$ and $\vec{D_2}$ **.** $\in_{r1} = 1$ and $\in_{r2} = 2$.	7 Marks
		(OR)	
6	a)	Derive Maxwell's equations for time varying fields.	7 Marks
	b)	If $\vec{E}$ of an electromagnetic wave in free space is given by $\vec{E} = 2\cos\omega\,(t - z/\upsilon_0)\,\vec{ay}\,V/m$, find the magnetic field $\vec{H}$.	7 Marks

UNIT-IV

7	a)	Define uniform plane wave. Give the relation between E and H in a uniform plane wave.	7 Marks
	b)	When the amplitude of the magnetic field in a plane wave is 2 A/m, determine the magnitude of the electric field, i) for the plane wave in free space ii) when the wave Propagates in a medium which is characterized by $\sigma = 0$, $\mu = \mu_0$.	7 Marks
		(OR)	
8	a)	Derive expression for reflection and transmission coefficients of an EM wave when it is incident normally on a dielectric.	7 Marks
	b)	Explain the significances of Poynting theorem and Poynting vector.	7 Marks

UNIT-V

9	a)	Derive the equation for the input impedance of a transmission line.	7 Marks
	b)	Write short notes on reflection coefficient, standing wave ratio and transmission coefficient.	7 Marks

(OR)

10	a)	Explain the characteristics of Smith chart and its applications.	7 Marks
	b)	A transmission line of length 0.4 λ has a characteristic impedance of 100Ω and is terminated in a load impedance of **200+*j* 180Ω.** Find out (i) Voltage reflection coefficient; (ii) VSWR; (iii) Input impedance of the line using Smith chart.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

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 sinusoidal signal $\mathbf{x(t) = \cos(\omega t + \theta)}$ is periodic and that its fundamental period is $\mathbf{2\pi/\omega}$. 7 Marks

b) Sketch the following signal. 7 Marks
$f(t) = r(t) - r(t-1) - r(t-2) - r(t-3)$

(OR)

2 a) The input x[n] and the impulse response h[n] of a discrete-time LTI system are given by $\mathbf{x[n] = u[n]}$, $\mathbf{h[n] = \alpha^n u[n]}$ for $\mathbf{0 < \alpha < 1}$. Compute the output **y[n]**. 8 Marks

b) Consider a discrete-time LTI system with impulse response **h[n]** given by 6 Marks
$\mathbf{h[n] = \alpha^n u[n]}$
i) Is this system causal?
ii) Is this system BIBO stable?

UNIT-II

3 a) What is exponential Fourier spectrum? Explain with necessary equations. 7 Marks

b) State the properties of Fourier series. 7 Marks

(OR)

4 a) Find the Fourier transform of $\mathbf{f(t) = \cos \pi t}$; $\mathbf{-½ \le t \le ½}$ and f (t) = 0 otherwise. 8 Marks

b) Prove frequency and time shifting properties of Fourier transform. 6 Marks

UNIT-III

5 a) Prove that the correlation and convolution functions are identical for even signals. 7 Marks

b) Explain detection of periodic signals in the presence of noise by correlation. 7 Marks

(OR)

6 a) State and prove sampling theorem for band limited signals using analytical approach 8 Marks

b) Determine the Nyquist sampling rate and Nyquist sampling interval for the signals (i) sinc(100nt) (ii) sinc(100nt) + sinc(50nt) 6 Marks

UNIT-IV

7 a) Derive the relation between Laplace transform and Fourier transform of signal. 7 Marks

b) Find the initial and final values of signal $x(t)$ whose Laplace transform is $\mathbf{X(s) = (7s + 10) / [s(s + 2)]}$. 7 Marks

(OR)

8 a) Describe the ROC of the signal $\mathbf{x(t) = e^{-b|t|}}$ for $\mathbf{b > 0}$. 7 Marks

b) Find the inverse Laplace transform of $\mathbf{X(s) = (-5s-7) / (s+1)(s-1)(s+2)}$. 7 Marks

UNIT-V

9 a) State and Prove the initial value theorem of *Z* transform. 7 Marks

b) Find the *Z* transform and its ROC of $\boldsymbol{x(n) = na^n}$. 7 Marks

(OR)

10 a) A first order discrete time system is described by the difference equation 7 Marks

$$y(n) = \frac{1}{2}[x(n) + x(n-1) + y(n-1)]$$

Determine the unit sample response sequence and test for its stability.

b) Using partial fraction expansion method, determine $\boldsymbol{x(n)}$, $\boldsymbol{n \geq 0}$ if its unilateral *Z*- transform *X*(*z*) is given by $X(z) = \frac{z^2 + 3z}{(z - 0.5)^3}$. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

SWITCHING THEORY AND LOGIC DESIGN

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Perform the subtraction of decimal 9137-2345 using 9's complement method. Express the result in 8421, 2421 and excess-3 codes.	7 Marks
	b)	Briefly explain the Non-weighted code binary number system.	7 Marks
		(OR)	
2	a)	Explain basic laws of Boolean algebra with examples.	7 Marks
	b)	Simplify the expression Z= **AB'C' + AB'C + ABC** using Boolean laws.	7 Marks

UNIT-II

3		Simplify the following Boolean functions using K-maps: i) $\mathbf{f_1(A, B, C, D) = \sum_m(1, 3, 7, 11, 15) + \sum_d(0, 2, 5)}$ ii) **f₂(A, B, C, D) = B'D+A'BC'+AB'C+ABC'**	14 Marks
		(OR)	
4		Find all the prime implicants, essential prime implicants and minimal SOP expression for the following function using QM method. $\mathbf{F(A, B, C, D) = \sum_m(0, 1, 6, 7, 8, 9, 13, 14, 15)}$	14 Marks

UNIT-III

5	a)	Design a combinational circuit for 4-bit Adder/Subtractor.	6 Marks
	b)	Design a BCD to excess-3 code converter.	8 Marks
		(OR)	
6	a)	Implement a full adder circuit using 4x1 multiplexers	6 Marks
	b)	Explain about Encoder and Priority Encoder.	8 Marks

UNIT-IV

7	a)	Explain the operation of the following flip-flops with truth table: i) D flip-flop ii) T flip-flop	6 Marks
	b)	Explain the operation of a 3-bit synchronous up counter with necessary diagrams.	8 Marks
		(OR)	
8	a)	What is Race around condition? How it can be eliminated using master slave flip flop?	6 Marks
	b)	Explain the operation of 4-bit shift register with its modes of operation.	8 Marks

UNIT-V

9		Explain the analysis procedure of asynchronous circuit with an illustration.	14 Marks
		(OR)	
10	a)	Explain the operation of debounce circuit with neat circuit diagram.	7 Marks
	b)	Find a circuit that has no static hazards and implements the Boolean function **F(A,B,C,D) =∑(0,2,6 7,8,10,12).**	7 Marks

CODE No.:14BT40431 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

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 a single stage transistor amplifier R_S=10K and R_L= 10K, the h-parameter values are h_{fc}= −51, h_{ic} = 1.1K, h_{rc} = 1, h_{oc} = 25μA/V. Find A_I, A_V, A_{VS}, R_i and R_o for the CC transistor configuration. 10 Marks

b) Write a short note on Gain-Bandwidth product of amplifiers. 4 Marks

(OR)

2 a) Derive the expressions for A_i, A_V of CE amplifier circuit. Explain how A_i and A_V are effected by R_L. 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 $\mathbf{I_b = I_{bm} \sin\omega t}$. 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 low-pass RC circuit. 7 Marks

b) Explain the diode forward recovery time and reverse recovery time as a switch. 7 Marks

(OR)

8 a) Draw the circuit diagram of double clipping circuit and explain its operation with neat diagrams (with both ideal and non-ideal diodes). 7 Marks

b) Explain the effect of transistor breakdown voltages and switching times on its operation as a switch. 7 Marks

UNIT-V

9		Draw the circuit diagram for Schmitt trigger and explain its operation. What are the applications of the above circuit? Derive the expressions for UTP and LTP.	14 Marks

(OR)

10	a)	Design a monostable circuit that produces a pulse width of 10msec.	8 Marks
	b)	What is an astable multivibrator? Explain. How does this differ with the other multivibrators?	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

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)	Discuss about the standard organizations of Data Communications.	8 Marks
	b)	What is a metallic transmission line? Explain the five types of metallic transmission line losses.	6 Marks
		(OR)	
2	a)	Describe the following terms Information rate, Bit, Bit Rate and Baud.	6 Marks
	b)	Explain the significance of I and Q channels in a QPSK Modulator.	8 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 T_1 and T_2 carrier system.	8 Marks

UNIT-IV

7	a)	Define Subscriber Loop. Explain in brief about working of standard telephone set.	7 Marks
	b)	Write down the functional mechanism of Cellular telephone systems and Cordless telephone systems.	7 Marks
		(OR)	
8	a)	What is a telephone set? Describe in detail the various functional components of a standard telephone set with a neat diagram.	7 Marks
	b)	Define crosstalk. Explain in detail about private-line circuits.	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: Single-precision checksum, Double precision checksum, Honeywell checksum and Residue checksum.	9 Marks
	b)	Discuss analog cellular system.	5 Marks

CODE No.:14BT40501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

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)	Apply 2's complement binary division algorithm over -7/3 and show step by step calculations.	7 Marks
	b)	Write about Register Transfers and Register Transfer language with an example.	7 Marks
		(OR)	
2	a)	Design one stage of arithmetic logic shift unit and show the function table.	7 Marks
	b)	Specify IEEE 754 floating point formats for half, single, double and quad precision numbers.	7 Marks

UNIT-II

3		Draw and explain the block diagram for micro programmed control unit and also explain its operations.	14 Marks
		(OR)	
4	a)	Write down the organization of typical hardwired control unit and explain the functions performed by the various blocks.	10 Marks
	b)	Write short notes on addressing sequence.	4 Marks

UNIT-III

5	a)	Compare interrupt driven data transfer scheme with DMA. Using block diagram explain interrupt driven transfer scheme.	8 Marks
	b)	Why bus arbitration is required? Explain with block diagram of bus arbitration using daisy chain.	6 Marks
		(OR)	
6		When a device interrupt occurs, how does the processor determine which device issued the interrupt? Explain.	14 Marks

UNIT-IV

7	a)	Define basic terms Hit, Miss and Miss penalty and explain how to compute performance of cache memory.	7 Marks
	b)	List different types of Main memories and compare them.	7 Marks
8	a)	Discuss in detail about secondary storage Optical Disks.	7 Marks
	b)	Assume that a computer system employs a cache with an access time of 20ns and a main memory with a cycle time of 200ns. Suppose that the hit ratio for reads is 90%, what would be the average access time for reads if the cache is a “look-through” cache?	7 Marks

UNIT-V

9	a)	Distinguish between Arithmetic pipeline and Instruction pipeline.	7 Marks
	b)	Discuss the characteristics of multiprocessors.	7 Marks
		(OR)	
10	a)	Explain Inter Process Arbitration in detail.	7 Marks
	b)	An unpipelined processor has a cycle time of 25ns. What is the cycle time of a pipelined version of the processor with 5 evenly divided pipeline stages, if each pipeline latch has a latency of 1ns?	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

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)	Describe the characteristics of database system.	8 Marks
	b)	Explain in detail about the three-schema architecture of DBMS.	6 Marks
		(OR)	
2	a)	Explain about various constraints used in ER-model.	6 Marks
	b)	Discuss in detail about various attributes used in ER-model with suitable examples.	8 Marks

UNIT-II

3	a)	Describe the concept of Referential Integrity.	6 Marks
	b)	Write a short notes on: i) Foreign Key. ii) Relation state. iii) Database schema.	8 Marks
		(OR)	
4	a)	List out and explain different relational algebraic operations with example.	8 Marks
	b)	Define a View. Explain how SQL support Views.	6 Marks

UNIT-III

5	a)	Discuss about outer joins and disallowing NULL values in SQL.	7 Marks
	b)	State and explain various comparison operators and aggregative operators in SQL.	7 Marks
		(OR)	
6	a)	What is meant by normal form? Discuss about Third normal form with an example.	7 Marks
	b)	What are multivalued dependencies? Discuss about normalization using multivalued dependencies.	7 Marks

UNIT-IV

7	a)	Draw transaction state diagram and describe each state that a transaction goes through during its execution.	8 Marks
	b)	What is serializability? Explain it.	6 Marks
		(OR)	
8	a)	Explain in detail about timestamp based concurrency control techniques.	7 Marks
	b)	Write and explain optimistic concurrency control algorithm.	7 Marks

UNIT-V

9	a)	What is an index structure? Explain how to use hash table as an index structure for a database.	8 Marks
	b)	When does a collision occur in hashing? Illustrate various collision resolutions techniques.	6 Marks
		(OR)	
10	a)	Discuss in detail about primary file organization.	7 Marks
	b)	By considering relevant example, show insertion and deletion operations on a B-Tree.	7 Marks

CODE No.:14BT40503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

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)	Write an algorithm to find selection sort and also analyse its time and space complexity.	10 Marks
	b)	Prove $\mathbf{4x^2-64x+288=\Omega(n^2)}$.	4 Marks
		(OR)	
2	a)	Explain the performance analysis of an algorithm.	8 Marks
	b)	Write an algorithm for weighting union and collapsing.	6 Marks

UNIT-II

3	a)	Explain the Strassen's matrix multiplication.	7 Marks
	b)	What are Biconnected components? Explain with an example.	7 Marks
		(OR)	
4	a)	Write an algorithm of Quick sort and explain in detail.	7 Marks
	b)	Compare Breadth First Search and Depth First Search traversals.	7 Marks

UNIT-III

5	a)	Write a greedy algorithm to the Job sequencing with deadlines.	7 Marks
	b)	Explain all pairs 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 LC-Search.	7 Marks
	b)	Write an iterative backtracking algorithm.	7 Marks
		(OR)	
8	a)	Implement LCBB on the following instances. n = 4 (p1,p2,p3,p4) = (10,10,12,18) (co1,co2,co3,co4) = (2,4,6,9) m = 15	8 Marks
	b)	Write recursive backtracking algorithm for the sum of subsets problem.	6 Marks

UNIT-V

9	a)	Explain the clauses of P and NP algorithm. Discuss the relationship between them.	6 Marks
	b)	Discuss about Cook's algorithm.	8 Marks
		(OR)	
10	a)	Differentiate NP-complete and NP-Hard.	6 Marks
	b)	Explain satisfiability problem and write the algorithm for the same.	8 Marks

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CODE No.:14BT41201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

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)	Explain the difference between Procedure Oriented Programming and Object Oriented Programming with the help of suitable programs/code.	7 Marks
	b)	Write short notes on Object Oriented Programming concepts.	7 Marks
		(OR)	
2		Discuss about all the Java buzzwords in detail.	14 Marks

UNIT-II

3	a)	Write short note on the Costs and Substitutability of inheritance.	7 Marks
	b)	Explain the key word 'final' with suitable Java program.	7 Marks
		(OR)	
4	a)	Explain the process of defining, creating and accessing a package.	7 Marks
	b)	Discuss about CLASSPATH with the help of suitable Java code.	7 Marks

UNIT-III

5	a)	Explain the life cycle of a thread.	7 Marks
	b)	Write a Java program to check whether the thread is alive or not.	7 Marks
		(OR)	
6	a)	Explain the exception hierarchy.	7 Marks
	b)	What is exception? Explain any four common exceptions that occur commonly in a Java program. Describe how they are handled.	7 Marks

UNIT-IV

7	a)	Explain the life cycle of an Applet.	7 Marks
	b)	Design an Applet to display the status of a checkbox on click of a button.	7 Marks
		(OR)	
8		Design a basic calculator using Applets by implementing appropriate controls.	14 Marks

UNIT-V

9	a)	Explain the life cycle of a Servlet and the methods involved from its creation to destruction.	7 Marks
	b)	Write short note on TOM Cat server.	7 Marks
		(OR)	
10	a)	Write a Java program to connect to a database and retrieve all the data.	7 Marks
	b)	Write short note on Scrollable Results and Transactions.	7 Marks

CODE No.:14BT41501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December – 2017

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)	What is meant by homogenous coordinate? What is its significance?	7 Marks
	b)	Rotate the point P(-2,4) about the origin 30^0 in anti-clock wise direction.	7 Marks
		(OR)	
4	a)	Explain the working of the Suther-Hodgeman algorithm for polygon clipping with the help of suitable example.	7 Marks
	b)	Derive the window to view port transformation.	7 Marks

UNIT-III

5	a)	Discuss about the role of parametric functions in curve generation.	7 Marks
	b)	Draw the Bernstein polynomials. Illustrate their role in Bezier curve generation.	7 Marks
		(OR)	
6	a)	What are the characteristics of parametric cubic curves? What are its advantages?	7 Marks
	b)	Derive the basis matrix (NB) for Bezier curve.	7 Marks

UNIT-IV

7		List the matrix forms for different basic geometric transformations in 3-D graphics. Discuss whether the reference is point or axis or plane for each of the operation.	14 Marks
		(OR)	
8	a)	Give the procedure for reflecting about an arbitrary selected plane.	7 Marks
	b)	Describe the transformation ML which reflects an object about a Line **L**.	7 Marks

UNIT-V

9		Explain about the Depth Buffer algorithm and Depth Sorting method.	14 Marks
		(OR)	
10		Explain about the Area subdivision method and Shading methods.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December – 2017

CONTROL SYSTEMS

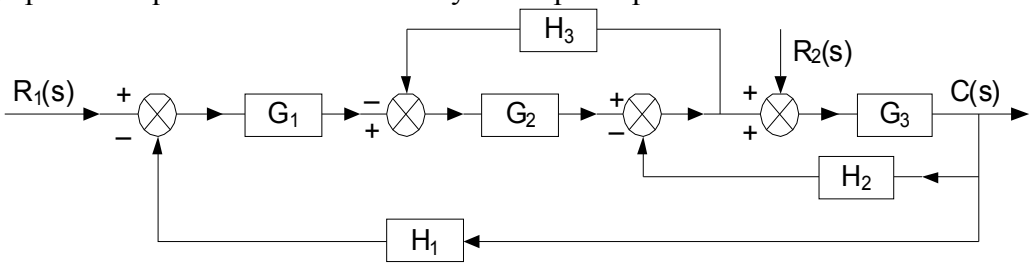
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

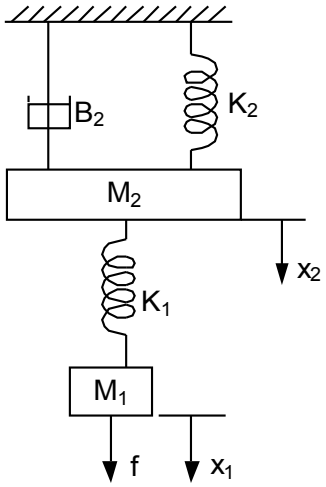
1 a) Find the transfer function $C(s)/R_1(s)$ and $C(s)/R_2(s)$ in figure using signal flow graph technique and assume that only one input is present in each case. 7 Marks



b) Determine the transfer function of field controlled DC motor and draw the block diagram. 7 Marks

(OR)

2 a) Write the differential equations governing the behaviour of the mechanical system shown in figure. Also obtain the analogous electrical circuit in force-current analogy. 7 Marks



b) Explain the principle and operation of synchro. 7 Marks

UNIT-II

3 a) Derive the expressions for peak time and settling time of a standard second order under damped system. 7 Marks

b) A unity feedback system has an open-loop transfer function $G(S) = \frac{K}{S(S+10)}$. 7 Marks

Determine K so that the system will have a damping ratio 0.5. For this value of K, determine peak over shoot and time for peak over shoot for the unit step input.

(OR)

4 a) Determine the step, ramp and parabolic error constants for the system $G(s) = \frac{K}{s^2(s+1))}$ with unity feedback. 7 Marks

b) Derive the response of a standard under damped second order system for unit step input. 7 Marks

UNIT-III

5 a) Consider a sixth order system with character equation $s^6+2s^5+8s^4+12s^3+20s^2+16s+16 = 0$. Find the stability of the system using Routh's test and comment on nature of roots. 7 Marks

b) What are the rules to formulate root locus of a closed loop control system? 7 Marks

(OR)

6 Sketch the root locus plot of a unity feedback system with open loop transfer function $G(s) = K/s(s+2)(s+4)$. Find the range of values of K for which the system has damped oscillatory response. 14 Marks

UNIT-IV

7 Sketch the bode plot for the transfer function and determine the system gain K for which the gain cross over frequency ω_c to be 5rad/sec. 14 Marks

$G(s)=Ks^2/(1+0.2s)(1+0.02s)$

(OR)

8 a) What are the advantages of frequency domain analysis? 7 Marks

b) What are compensating networks? Explain about lag-lead network. 7 Marks

UNIT-V

9 a) Obtain the state space representation of the system whose differential equation is given by $Y_3+2Y_2+3Y_1+6Y_0=U_2-U_1+2U_0$. Also draw the signal flow graph for the system. 6 Marks

b) Obtain the solution for state equations 8 Marks

$$\dot{X} = \begin{bmatrix} 0 & 1 \\ -1 & -2 \end{bmatrix} X + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u$$

$X_0 = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$, and '$u$' is a unit step input.

(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

$$A = \begin{bmatrix} 0 & 1 & 1 \\ 0 & 0 & 1 \\ -1 & -3 & -3 \end{bmatrix} \quad B = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} \quad C = \begin{bmatrix} 0 & 1 & -1 \end{bmatrix}$$

CODE No.:14BT50405 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

PULSE AND DIGITAL CIRCUITS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the relation between rise time and upper cut-off frequency of RC low pass circuit.	7 Marks
	b)	Derive the conditions for good integrator.	7 Marks
		(OR)	
2	a)	Derive the expression for the percentage tilt of the output of high pass circuit with large time constant excited by a symmetrical square wave with zero average value.	7 Marks
	b)	1kHz square wave output from an amplifier has rise time t_r = 350ns and tilt = 5%. Determine the upper and lower 3-db frequencies.	7 Marks

UNIT-II

3	a)	State and prove clamping circuit theorem.	7 Marks
	b)	Explain the operation of transistor clipper circuit.	7 Marks
		(OR)	
4	a)	A 125V peak -peak square wave with a period of 25ms is to be negatively clamped at 50V. Draw the circuit diagram required to accomplish it. Sketch the output waveform.	8 Marks
	b)	What are the advantages and disadvantages of the clippers?	6 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 in detail about basic principles of Miller and bootstrap time-base generators.	7 Marks
	b)	With the help of a neat circuit diagram, explain the working of a simple current sweep.	7 Marks
		(OR)	
8	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

UNIT-V

9	a)	Explain the operation of four diode sampling gate.	7 Marks
	b)	Compare the parameters of the digital logic families.	7 Marks
		(OR)	
10	a)	Describe OR gate logic operation with diodes.	7 Marks
	b)	Explain the operation of six diode sampling gate.	7 Marks

CODE No.:14BT50501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

THEORY OF COMPUTATION

[Computer Science and Systems Engineering]

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

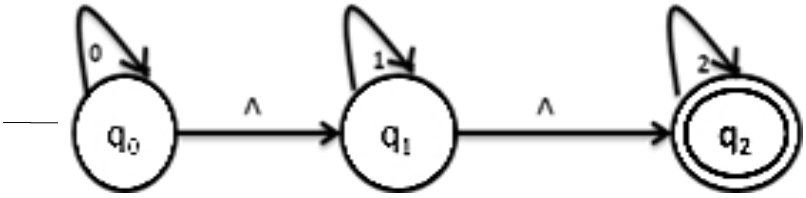
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Design NFA for the language having strings that contain 011 as substring over input = {0, 1} and convert into DFA. 14 Marks

(OR)

2 Prove that if L be a set accepted by NFA, then there exists a DFA that accepts L. 14 Marks
Construct the equivalent NFA without ^-moves



UNIT-II

3 Construct a Finite Automata for the regular expression (a+b)*abb. 14 Marks

(OR)

4 State and prove closure properties and decision algorithms of regular sets. 14 Marks

UNIT-III

5 Construct a PDA accepting the language of palindromes over the alphabet {a,b}. 14 Marks
Prove the equivalence of acceptance by final state and empty stack in PDA.

(OR)

6 State and prove closure properties and decision algorithms for CFL. 14 Marks

UNIT-IV

7 Draw a transition diagram for a Turing machine accepting the language **$\{1^n2^n3^n \mid n>0\}$.** 14 Marks

(OR)

8 Define Turing machine. State different types of Turing machines and explain universal Turing machine. 14 Marks

UNIT-V

9 Explain universal Turing machine and show that the universal language is recursively enumerable but not recursive. 14 Marks

(OR)

10 If language L and its complement L' are both recursively enumerable then show that L and L' is recursive. 14 Marks

CODE No.:14BT51501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

OPERATING SYSTEMS

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Discuss different types of operating systems with suitable examples.	14 Marks
		(OR)	
2		Briefly explain various scheduling algorithms.	14 Marks

UNIT-II

3	a)	Explain the software solution for critical section problem.	7 Marks
	b)	What is synchronization hardware?	7 Marks
		(OR)	
4	a)	Explain the system model for deadlocks.	7 Marks
	b)	How do you prevent the occurrence of deadlocks?	7 Marks

UNIT-III

5		Write a short note on Structure of the page table.	14 Marks
		(OR)	
6	a)	What is the cause of thrashing? How does the system detect thrashing? Once it detects thrashing, what can the system do to eliminate this problem?	7 Marks
	b)	Consider a system that allocates pages of different sizes to its processes. What are the advantages of such a paging scheme? What modifications to the virtual memory system provide this functionality?	7 Marks

UNIT-IV

7	a)	Describe File structure, File attributes and File operations in detail.	10 Marks
	b)	Write a note on free space management of file system.	4 Marks
		(OR)	
8		Write about Stable storage and Tertiary storage.	14 Marks

UNIT-V

9	a)	Explain application I/O interface.	7 Marks
	b)	Explain interrupt driven I/O cycle with a neat sketch.	7 Marks
		(OR)	
10	a)	Discuss the strengths and weaknesses of implementing an access matrix using capabilities that are associated with domains.	7 Marks
	b)	Explain the goals of protection.	7 Marks

CODE No.:14BT3BS03 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

PROBABILITY AND STATISTICS

[Civil Engineering, Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define the following with an example: 8 Marks
i) Mutually exclusive events. ii) Classical definition of probability.
iii) Conditional probability.

b) If X and Y are any two random variables, then prove that 6 Marks
E(X + Y) = E(X) + E(Y) provided E(X) and E(y) exist.

(OR)

2 a) State and prove addition theorem of probability for any two events A and B. 7 Marks

b) Let X denote the number of heads in a single toss of 4 fair coins. Determine 7 Marks
i) $P(X < 2)$ ii) $P(1 < X \leq 3)$

UNIT-II

3 a) Out of 800 families with 5 children each, how many would you expect to have 7 Marks
(i) 3 boys (ii) 5 girls (iii) either 2 or 3 boys (iv) atleast one boy? Assume equal probabilities for boys and girls.

b) If X is a poisson variate, then prove that mean = variance = λ. 7 Marks

(OR)

4 a) 20% of items produced from a factory are defective. Find the probability that in a sample of 5 choosen at random. 7 Marks
i) None is defective. ii) One is defective. iii) $P(1 < x < 4)$.

b) 1000 students have written an examination that mean of test is 35 and standard deviation is 5. Assuming the distribution to be normal, find: 7 Marks
i) How many students marks lie between 25 and 40?
ii) How many students get more than 40?
iii) How many students below 20?

UNIT-III

5 a) Discuss the basic principles underlying control charts. Explain in brief how control limits are determined for P – Chart and C – Charts. 8 Marks

b) The following are the number of hours which 10 students studied for an examination and the scores they obtained. 6 Marks

Number of hours studied : x	8	5	11	13	10	5	18	15	2	8
Score : y	56	44	79	72	70	54	94	85	33	65

Calculate Rank correlation coefficient.

(OR)

6 a) Explain the terms chance causes and assignable causes. 7 Marks

b) Calculate the coefficient of correlation from the following data. Also obtain the equations of the lines of regression and obtain an estimate of Y when X = 6.2. 7 Marks

X :	1	2	3	4	5	6	7	8	9
Y :	9	8	10	12	11	13	14	16	15

UNIT-IV

7 a) Write about i) Type 1 and Type 2 error. 7 Marks
ii) Critical region.
iii) Right tailed test.

b) A population consists of five numbers 2, 3, 6, 8 and 11. Consider all possible samples of size 2 that can be drawn with replacement from the population. Determine: 7 Marks
i) The population mean.
ii) The population standard deviation.
iii) The mean of the means of sampling distribution.

(OR)

8 a) Explain the procedure generally followed in testing hypothesis. 6 Marks

b) A sample of 64 students have a mean weight of 70kgs. Can this be regard as a sample from a population with mean weight 56kgs and standard deviation 25kgs? 8 Marks

UNIT-V

9 a) The following table gives the distribution of digits in numbers chosen at random from a telephone directory. Test whether the digits may be taken to occur equally frequently in the directory. 7 Marks

Digit	0	1	2	3	4	5	6	7	8	9
Frequency	1026	1107	997	966	1075	933	1107	972	964	853

b) The blood pressure of 5-women before and after intake of a certain drug as follows: 7 Marks

Before	110	120	125	132	125
After	120	118	125	136	121

Test whether there is significant change in blood pressure at 1% level of significance.

(OR)

10 a) A dice is thrown 264 times with the following results. Test the goodness of fit at 5% level. 7 Marks

Face	1	2	3	4	5	6
Frequency	40	32	28	58	54	52

b) The time taken by workers in performing a job by method 1 and method 2 as follows: 7 Marks

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

Do the data show the variance of time distributions from population from which these samples are drawn do not differ significantly?

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

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)	Describe the process of ecological succession.	7 Marks
	b)	Explain briefly about the energy flow in the ecosystem.	7 Marks
		(OR)	
4	a)	Explain different methods of biodiversity conservation.	7 Marks
	b)	Write a brief note on man wild life conflicts.	7 Marks

UNIT-III

5	a)	What is meant by indoor pollution? Explain.	6 Marks
	b)	Write a brief account of solid waste management.	8 Marks
		(OR)	
6	a)	Write note on sources and effects of noise pollution.	6 Marks
	b)	What is meant by disaster management? Explain the cause and effects of floods.	8 Marks

UNIT-IV

7	a)	Give the merits and demerits of Nuclear energy.	7 Marks
	b)	Importance of waste land reclamation.	7 Marks
		(OR)	
8	a)	Enumerate and discuss the effects of global warming.	7 Marks
	b)	What are the salient features of Wildlife protection act 1972?	7 Marks

UNIT-V

9	a)	What is PAN? Write possible solution for global warming.	7 Marks
	b)	Write a short note on i) Ganga action plan; ii) Chernobyl accident.	7 Marks
		(OR)	
10	a)	Report on your field work observation of pound eco-system.	7 Marks
	b)	Write a short note on i) population characteristics; ii) population explosion.	7 Marks

CODE No.:14BT4HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

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	Discuss the role of informal communication in a professional environment.	14 Marks
	(OR)	
2	Suggest any rational strategies for improving organizational communication.	14 Marks

UNIT-II

3	Discuss the role of cultural diversity in cross-cultural communication.	14 Marks
	(OR)	
4	Discuss the role of Non-verbal communication in a professional environment with special reference to Haptics and Kinesics.	14 Marks

UNIT-III

5	Present the fundamental features and components of a business letter.	14 Marks
	(OR)	
6	Compile an analytical note on the steps of writing a business report.	14 Marks

UNIT-IV

7	Present the essential features of business presentations with special reference to audience orientation.	14 Marks
	(OR)	
8	Enumerate the critical success factors in a Group Discussion.	14 Marks

UNIT-V

9	Why public speaking is accorded a pride of place in MBA curriculum?	14 Marks
	(OR)	
10	Prepare a résumé and cover letter for a company that is looking for management trainees. Assume relevant data.	14 Marks

CODE No.:14BT40101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

STRUCTURAL ANALYSIS - I

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Derive the expressions for finding out principal stresses, principal planes and maximum shear stress of a shaft under both B.M and Torque. 14 Marks

(OR)

2 At a point in material under stress, the intensity of the resultant stress on a certain plane is 60Mpa(Tensile) inclined at 30° to the normal of that plane. The stress on a plane at right angles to this has a normal tensile component of intensity 40Mpa(Tensile). Find: 14 Marks

i) The Principal planes and Principal stresses.
ii) The planes of maximum shear and its magnitude.
iii) Resultant stress on the plane on which 40MPa stress is acting.

UNIT-II

3 Find 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. Find its maximum slope and deflection. 14 Marks

(OR)

4 A simply supported rectangular R.C beam is of length 3m and cross section 100mm x 200mm. It carries a point load of 20kN at a distance of 1m from the left support. Find the maximum slope and maximum deflection under the point load. Take E = 1 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 both the ends as fixed. 14 Marks

(OR)

6 A 4.6m long circular column having pinned ends has 240mm external diameter and 20mm thickness. The column carries a load of 180kN at an eccentricity of 22mm from its longitudinal axis. Determine: 14 Marks

i) Stresses in the extreme fibres of the cross-section.
ii) Maximum eccentricity so as to have no tension anywhere in its cross section.

The modulus of elasticity of the material is 80GPa.

UNIT-IV

7 A fixed beam ABC carries a u.d.l of 5kN/m over the entire span and a point load of 5kN at B. If AB = BC = 2m and EI = 2000kN-m^2, find the fixing moments and the maximum deflection. Also draw the S.F and B.M diagrams. 14 Marks

(OR)

8 A continuous beam ABC is simply supported at A, B and C. It carries a central point load of 10kN on the span AB and a central clockwise moment of 10kN-m at mid span of BC. If AB = 4m and BC = 6m, draw the S.F and B.M diagrams. 14 Marks

UNIT-V

9	Find the maximum principal stress developed in a cylindrical shaft 80mm in diameter and subjected to a B.M of 2.5kN-m and a twisting moment of 4.2 kN-m. If the yield stress of the shaft material is 300MN/m^2, determine the factor of safety according to the maximum shearing stress theory of failure.	14 Marks

(OR)

10	A 90mm x 60mm x 10mm unequal angle is placed with the larger leg as vertical. It is subjected to a sagging B.M. of 700N-m on the horizontal axis. Determine the stresses induced at the outer corner points.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

SURVEYING

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the following terms. 9 Marks
i) Check line. ii) Tie station. iii) Well conditioned triangle.

b) A road 6m wide in a cutting is on a curve of 120m radius and is to be widened to 9m width the whole widening taking place on the inside of the curve. The side slope of 1.5 horizontal to 1 vertical is to be retained. The depths of formation are 3.0, 4.6 and 5.0 metres at chainages 200, 230 and 260 metres respectively. The original surface of the ground is level. Calculate the volume of earth work to be removed in this length of 60 metres. 5 Marks

(OR)

2 a) What are the instruments required in making a chain survey? How is a chain survey executed in the field? 7 Marks

b) A series of perpendicular offsets are taken from a straight line to a curved boundary line. The offsets are 5m apart and were taken in the following order: 6.8, 7.2, 4.6, 5.7, 7.1, 6.3 and 6.8. Find the area enclosed between the straight line, curved boundary line and the two offsets. 7 Marks

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 800m away from O is 1.595 and when held at B 1200m away it is 2.984. Determine the true difference in elevation between A and B. 7 Marks

UNIT-III

5 a) Explain the following terms. 6 Marks
i) Line of collimation. ii) Conjucate foci

b) Following are the lengths and bearings of a traverse ABCD. 8 Marks

Line	Length in meters	Bearings
AB	248	30°
BC	320	140°
CD	180	210°

Calculate the length and bearing.

(OR)

6 Explain the procedure involved in Gales traverse table. 14 Marks

UNIT-IV

7 Explain the procedure involved in setting out a combined curve 14 Marks

i) By means of a theodolite.

ii) With a chain and tape only.

(OR)

8 Explain the various methods of determining the length of a transition curve. 14 Marks

UNIT-V

9 Explain the working principle of Geodimeter with neat sketch. 14 Marks

(OR)

10 Explain the applications of electronic distance measuring systems. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

FLUID MECHANICS - II

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain the terms: boundary layer, boundary layer theory and boundary layer thickness. What is separation of boundary layer? Explain with a neat sketch. 14 Marks

(OR)

2 Define the terms: drag and lift and a man descends to the ground from an aeroplane with the help of a parachute which is hemispherical having a diameter of 4m against the resistance of air with a uniform velocity of 25m/s. Find the weight of the man if the weight of parachute is 9.81N. 14 Marks
Take $C_D = 0.6$ and density of air $=1.25 kg/m^3$.

UNIT-II

3 a) Derive dynamic equation for gradually varied flow. 7 Marks
b) When does hydraulic jump occur? Also give its applications. 7 Marks

(OR)

4 A trapezoidal channel with side slopes of 1 to 1 has to be designed to convey $12 m^3/s$ at a velocity of 2.5m/s so that the amount of concrete lining for the bed and sides is the minimum. Calculate the area of lining required for one metre length of canal. 14 Marks

UNIT-III

5 Obtain an expression for the force exerted by a jet of water on a fixed vertical plate in the direction of the jet and a jet of water of diameter 50mm strikes a fixed plate in such a way that the angle between the plate and the jet is 30°. The force exerted in the direction of the jet is 1471.5N. Determine the rate of flow of water. 14 Marks

(OR)

6 Show that the efficiency of a free jet striking normally on a series of flat plates mounted on the periphery of a wheel can never exceed 50%. 14 Marks

UNIT-IV

7 a) Give the working proportions of a Pelton wheel. 7 Marks
b) Give the necessity of governing of turbines. 7 Marks

(OR)

8 Give the classification of hydro power plants. Explain in brief. 14 Marks

UNIT-V

9 Define the various heads and efficiencies of a centrifugal pump and derive an expression for the specific speed of a centrifugal pump. 14 Marks

(OR)

10 Explain the characteristic curves of a centrifugal pump with neat sketches and explain the working procedure of a gear pump. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

SIGNALS AND NETWORKS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Check the properties (i) Linear (ii) Time-Invariance; (iii) Causality for the system $Y(t) = X(t)\cos(t + 1)$. 7 Marks

b) State and prove sampling theorem. 7 Marks

(OR)

2 a) Test if the following systems are stable or not. 7 Marks

i) $Y(n) = \cos X(n)$ ii) $Y(n) = a^{X(n)}$

b) Determine the impulse response of the following casual system. 7 Marks

$Y(n) - Z\cos\theta\, y(n-2) + y(n-3) = X(n)$

UNIT-II

3 a) Design a constant **k** low pass filter with a cut-off frequency 1 kHz and design impedance of 500Ω. 8 Marks

b) What is cut-off frequency and image impedance of a filter network? 3 Marks

c) What is constant k filter? Why it is called prototype filter section. 3 Marks

(OR)

4 a) Design a m-derived high pass filter with a cut-off frequency 10 kHz and design impedance of 600Ω and m = 0.3 7 Marks

b) Design a k-type band pass filter with a cut-off frequency 1 kHz and 10 kHz and design impedance of 500Ω. 7 Marks

UNIT-III

5 a) Explain the term time constant for an inductive circuits. 2 Marks

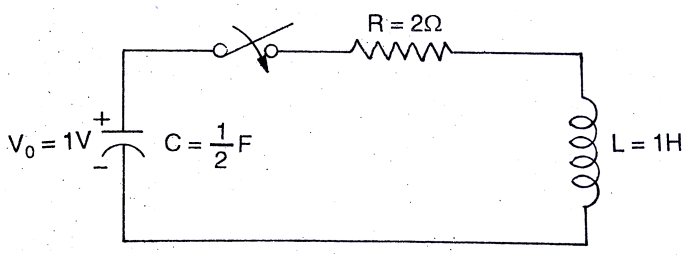
b) A coil of resistance 2ohms and inductance 0.5 H is connected across a 50V **dc** supply. Calculate: 12 Marks

i) the initial rate of growth of current. ii) the time constant.

iii) the final current. iv) the time required for the current to reach 20A.

(OR)

6 a) For the R-L-C series circuit shown with the capacitor initially charged to a voltage V_0 as indicated in the figure. Find expression for the current in the circuit. 9 Marks



b) A capacitor of 8 μF is connected to a dc supply through a resistance of 1MΩ.Compute the time taken for the capacitor to reach 95% of its final value. 5 Marks

UNIT-IV

7 a) The y-parameters for certain two port network are $y_{11}=2$, $y_{12}=-0.2$, $y_{21}=20$ and $y_{22}=0.1$ all in m℧. A source having an internal resistance of 500 Ω is connected the input and 2.5kΩ resistor is at the output. Calculate: 8 Marks

i) G_v. ii) G_I. iii) G_p.

b) Given the z parameters for a bilateral two port $z_{11}=8\Omega$, $z_{21}=5\Omega$, $z_{22}=4\Omega$. Find the four hybrid parameters. 6 Marks

(OR)

8 a) Find four ***h*** parameters of these resistive two ports: (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. 14 Marks

UNIT-V

9 a) Find the network for the following function in Foster-I and Cauer-I form 7 Marks

$$Y(s) = \frac{(s+1)(s+3)}{(s+2)(s+4)}$$

b) Find the R-L network corresponding to the driving point impedance using Cauer form I and Cauer form II. $Y(s) = \dfrac{(s+2)(s+4)}{(s+6)(s+8)}$ 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

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

ELECTRICAL AND ELECTRONIC MEASUREMENTS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the static characteristics of instruments.	7 Marks
	b)	A voltmeter is accurate to 98% of its full-scale reading. i) If a voltmeter read 200V on 500V range, what is the absolute error? ii) What is the percentage error reading of part (i)?	7 Marks
		(OR)	
2	a)	Explain the construction and working of D'Arsonaval galvanometer.	7 Marks
	b)	Explain the essential operating forces that occur on MI and MC type instruments.	7 Marks

UNIT-II

3	a)	Explain measurement of reactive power in three phase balanced and un-balanced loads.	7 Marks
	b)	Explain working principle of LPF wattmeter.	7 Marks
		(OR)	
4	a)	Describe the constructional details of an Electrodynamometer type wattmeter and derive the expression for torque when the instrument is used on AC.	7 Marks
	b)	Explain working principle of single phase energy meter with diagram.	7 Marks

UNIT-III

5	a)	State the reasons why the current transformer must never be operated on open circuit.	7 Marks
	b)	Give the comparison of CT and PT.	7 Marks
		(OR)	
6	a)	Describe the measurement of power using Instrument transformers.	7 Marks
	b)	How errors can be reduced using Instrument transformers?	7 Marks

UNIT-IV

7	a)	Explain how a simple AC bridge circuit operates and derive an expression for the unknown parameters.	7 Marks
	b)	Define the term Null as it applies to bridge measurement and write two conditions that must be satisfied to make an AC bridge balance.	7 Marks
		(OR)	
8	a)	Describe how Wheatstone bridge may be used to control various physical parameters.	7 Marks
	b)	What resistance range must resistor R_3 have in order to measure unknown resistor in the range of 1-100KΩ using a Wheatstone bridge by taking R_1=1KΩ and R_2= 10KΩ?	7 Marks

UNIT-V

9		Draw the circuit diagram of a Crompton's potentiometer and explain its working. Describe the steps used when measuring an unknown resistance.	14 Marks
		(OR)	
10	a)	Explain the term 'standardization' of potentiometer. Describe the procedure of standardization of a DC potentiometer.	7 Marks

b) Explain the principle and working of CRT display with a neat diagram. 7 Marks

CODE No.:14BT40204 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

TRANSFORMERS AND INDUCTION MACHINES

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Classify various types of transformers based on their construction and explain them with applications.	7 Marks
	b)	What are the various losses of a transformer? Derive the condition for getting maximum efficiency of a transformer.	7 Marks

(OR)

2	a)	Discuss the effect of variations of frequency and voltage on iron loss.	7 Marks
	b)	A single phase transformer has 500 turns on primary and 100 turns on the secondary. The no load current is 24A at a power factor of 0.2 lagging. Calculate the primary current and power factor when the secondary current is 200A at a power factor of 0.8 lagging. Assume the voltage drop in the windings to be negligible.	7 Marks

UNIT-II

3	a)	Write a short note on All day efficiency of the transformer.	4 Marks
	b)	Find the All day efficiency of single phase transformer having maximum efficiency of 98 % at 15KVA at UPF and loaded as follows. 12 hours - 2KW at 0.5 power factor lagging. 6 hours - 12KW at 0.8 power factor lagging. 6 hours - no load.	10 Marks

(OR)

4	a)	What are the advantages of Sumpner's test? Give the related calculation to find the efficiency of a transformer.	7 Marks
	b)	Derive the equations for the currents supplied by each transformer when two transformers are operating in parallel with equal voltage ratios.	7 Marks

UNIT-III

5	a)	What are the various three phase transformer connections? Explain star-delta and open delta connections with neat diagrams.	7 Marks
	b)	Two electric furnaces are connected to two secondaries of scott-connected transformer set at a voltage of 80V which is supplied from a 3 phase 6600V system. The load on teaser is 480KW and on the main transformer is 720KW, both at 0.71 power factor lagging. Calculate the currents in the lines on the input side. Neglect losses.	7 Marks

(OR)

6	a)	Explain the principle of 3 phases to 2 phase conversion using scott connection.	7 Marks
	b)	Why is tap changing required for a transformer? Explain.	7 Marks

UNIT-IV

7	a)	Clearly explain the difference between the squirrel cage and slip ring induction motors.	7 Marks
	b)	The power input to a 3 phase induction motor is 100KW. The stator losses are equal to 2KW. Find the mechanical power output and rotor copper losses if the motor runs with a slip of 4%. Mechanical losses are equal to 2.5KW.	7 Marks

(OR)

8	a)	Derive the condition for getting maximum torque of 3 phase induction motor.	8 Marks
	b)	Draw the equivalent circuit of double cage 3 phase induction motor and explain each parameter.	6 Marks

UNIT-V

9	a)	Briefly explain cogging and crawling phenomenon.	8 Marks
	b)	Explain rotor resistance starting method of 3 phase slip ring induction motor with a neat diagram.	6 Marks

(OR)

10	a)	Explain the working principle of induction generator.	8 Marks
	b)	A 3 phase, 4KW, 400V, 50Hz, 4 P slip ring induction motor develops a maximum torque of 100N-m. It has rotor resistance = 0.5Ω/phase and rotor leakage reactance = 1.0Ω/phase. If the rotor resistance is doubled then what will be the new value of maximum torque?	6 Marks

CODE No.:14BT40301 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

KINEMATICS OF MACHINERY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define and explain the following terms: Mechanism, Machine, Link and Kinematic pair.	6 Marks
	b)	What do you understand by degrees of freedom? For a plane mechanism derive an expression for degrees of freedom.	8 Marks

(OR)

2		What do you mean by inversion of mechanism? Explain with sketches all inversions of quadric cycle chain.	14 Marks

UNIT-II

3		The crank and connecting rod of a horizontal steam engine are 0.5m and 2m long respectively. The crank makes 180 r.p.m. in the clockwise direction. When it has turned 45º from the inner dead centre position, determine: i) Velocity of piston. ii) Angular velocity of connecting rod. iii) Velocity of point E on the connecting rod 1.5m from the gudgeon pin.	14 Marks

(OR)

4		A link AB of four-bar linkage ABCD revolves uniformly at 120 r.pm in a clock wise direction. The link AD is fixed. Find the angular acceleration of links BC and CD. Given: AB = 75mm, BC = 175mm, CD = 150mm, DA = 100mm and angle BAD = 90º.	14 Marks

UNIT-III

5	a)	Sketch a pantograph, explain its working and show that it can be used to reproduce to an enlarged scale of a given figure.	7 Marks
	b)	Describe the Watt's parallel mechanism for straight line motion and derive the condition under which the straight line is traced.	7 Marks

(OR)

6	a)	What is the condition for correct steering? Sketch and show the two main types of steering gears and discuss their relative advantages.	7 Marks
	b)	Sketch the polar velocity diagram of a Hooke's joint and mark its salient features.	7 Marks

UNIT-IV

7		Draw the profile of a cam to raise a valve with harmonic motion through 40mm in 1/3 of revolution, keep it fully raised through 1/12 revolution, and to lower it with harmonic motion in 1/6 revolution. The valve remains closed during the rest of the revolution. The diameter of the roller is 20mm and minimum radius of the cam is to be 25mm. The diameter of the cam shaft is 25mm. The axis of the valve rod passes through the axis of the cam shaft. Assume the cam shaft to rotate with a uniform velocity.	14 Marks

(OR)

8	a)	Construct the displacement curve and deduce expressions for the velocity and acceleration of the follower when it moves with SHM.	7 Marks
	b)	Derive the relations for velocity and acceleration for a convex cam with a roller follower.	7 Marks

UNIT-V

9	a)	State and prove the law of gearing.	8 Marks
	b)	Show that the involute curves as the profiles of mating gears satisfy the law of gearing.	6 Marks

(OR)

10		A pair of spur gears with involute teeth is to give a gear ratio of 3:1. The arc of approach is not to be less than the circular pitch and smaller wheel is the driver. The angle of pressure is 20° i) What is the least number of teeth that can be used on each wheel? ii) What is the addendum of the wheel in terms of circular pitch?	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State Newton's equation of viscosity and give examples of its application.	7 Marks
	b)	How does vapor pressure affect fluid flow?	7 Marks

(OR)

2		A U-tube containing mercury has its right limb open to atmosphere. The left limb is full of water and is connected to a pipe containing water under the pressure, the centre of which is in level with the free surface of mercury. Find the pressure of water in the pipe above atmosphere, if the difference of level of mercury in the limbs is 5.08cm.	14 Marks

UNIT-II

3		Distinguish between: i) Steady and unsteady flow. ii) Uniform and Non-Uniform flow. iii) Compressible and Incompressible flow.	14 Marks

(OR)

4		State Bernoulli's theorem for steady flow of an incompressible fluid. Derive an expression for Bernoulli's theorem from first principle and state assumptions made for such derivation.	14 Marks

UNIT-III

5		Describe major and minor losses in pipe flow in detail.	14 Marks

(OR)

6	a)	Obtain an expression for force exerted by a jet of water on inclined (fixed and moving) flat plate in the direction of jet.	7 Marks
	b)	A nozzle of 50mm diameter delivers a stream of water at 20m/s perpendicular to a plate that moves away from the jet at 5m/s find: i) The force on the plate. (ii) Work done. iii) The efficiency of jet.	7 Marks

UNIT-IV

7	a)	Explain the construction and working of a Kaplan turbine with a neat sketch.	7 Marks
	b)	Calculate the diameter and speed of the runner of a Kaplan turbine developing 6000KW under an effective head of 5m. Overall efficiency of the turbine is 90%. The diameter of the boss is 0.4 times the external diameter of the runner. The turbine speed ratio is 2.0 and flow ratio is 0.6. What is the specific speed of the turbine?	7 Marks

(OR)

8	a)	Why is governing of turbines required? What are the main components of governing mechanism for a Pelton wheel turbine? Draw a neat sketch and explain.	7 Marks
	b)	What is meant by cavitation? What is its significance in turbines?	7 Marks

UNIT-V

9		Define a pump. Explain the principle and working of a centrifugal pump with a neat sketch.	14 Marks

(OR)

10	What are the components of hydro electric power plant? Explain with a neat sketch.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

THERMAL ENGINEERING - I

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Enumerate the difference in working principle of two strokes and four stroke S.I. engine with neat sketches. 7 Marks

b) Explain in detail the valve opening and closing diagrams of S.I. engine to that of diesel engine and bring down their significance. 7 Marks

(OR)

2 a) What are time loss factors in an engine? Discuss in detail. 7 Marks

b) Compare the actual fuel air cycle to that of an ideal standard air fuel cycle with neat sketches and explain the reasons for their difference of an Otto cycle. 7 Marks

UNIT-II

3 a) 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 the various types of combustion chambers used in CI engines with figures. 7 Marks

b) What is delay period? Explain the types in it. Also establish the factors that affect the delay period. 7 Marks

UNIT-III

5 The following observations were made during a trial of single-cylinder 4-stroke gas engine having a bore of 20cm and stroke of 25cm. 14 Marks

Duration of trial	=	0.5 hours
No. of revolutions	=	10000
No. of explosions	=	5000
Mean effective pressure	=	5 bar
Net load on the brake wheel	=	40kg
Effective diameter of brake wheel	=	1m
Total gas used at NTP	=	$2.4m^3$
Calorific value of gas	=	$20kJ/m^3$
Total air used	=	$36m^3$
Pressure of air	=	1 bar
Temperature of air	=	17^0C
Density of air at NTP	=	$1.3kg/m^3$
Temperature of exhaust gas	=	350^0C
Room temperature	=	17^0C
Specific heat of exhaust gas	=	1 kJ/kg K
Cooling water circulated	=	80kg
Rise in temperature of cooling water	=	30^0C

Draw up a heat balance sheet and estimate the mechanical and indicated thermal

efficiencies of the engine.

(OR)

6 a) What is the use of a dynamometer? With the help of a neat diagram, explain any one of the dynamometers. 7 Marks

b) Name different methods of measurement of fuel consumption in an engine and explain any one of them in detail. 7 Marks

UNIT-IV

7 a) Explain briefly the working principles of : 7 Marks

i) Stirling engine. ii) Stratified charge engine.

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) Discuss the effect of clearance on compression performance of a reciprocating compressor. 7 Marks

b) With the help of a neat sketch, explain working principle of Roots Blower. 7 Marks

(OR)

10 A single stage, single acting reciprocating air compressor with 50cm bore and 60cm stroke runs at 500 r.p.m. The suction pressure is 1 bar at 25^0C and the delivery pressure is 5 bar. Find the power required to run it if the compression follows: 14 Marks

i) Isothermal process.

ii) Adiabatic process.

iii) $pv^{1.3}$ = constant. Also find the isothermal and adiabatic efficiencies.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

MANUFACTURING TECHNOLOGY-II

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain 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)	Name the various sheet metal forming operations. Explain any one in detail.	7 Marks
	b)	Name the different types of dies used in press work.	7 Marks
		(OR)	
4	a)	Write short notes on : (i) Blanking. (ii) Slitting.	7 Marks
	b)	Write short notes on : (i) Spinning. (ii) Sheet bending.	7 Marks

UNIT-III

5	Describe the process of extrusion of plastics with a neat diagram. Name some products made by this process.	14 Marks
	(OR)	
6	Write a short notes on: (i) Thermoforming. (ii) Blow moulding.	14 Marks

UNIT-IV

7	With a neat sketch, explain the working principle of Ultrasonic Machining process and different elements in it. What are the advantages and limitations of this process?	14 Marks
	(OR)	
8	Illustrate the mechanism involved in abrasive jet machining with a neat sketch and its applications.	14 Marks

UNIT-V

9	Describe and emphasize the principle of Electo-Chemical Machining process with a neat sketch.	14 Marks
	(OR)	
10	Describe and emphasize the principle of Electo-Chemical Honing process with a neat sketch.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

ANALOG COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the need and operation of frequency division multiplexing with a neat diagram.	7 Marks
	b)	Describe the different reasons for modulation before transmission.	7 Marks
		(OR)	
2	a)	Describe the detection of AM waves using square-law detector and envelope detector with neat diagrams.	7 Marks
	b)	Explain the generation and detection of DSB-SC Signals.	7 Marks

UNIT-II

3	a)	Derive the time-domain and frequency domain representation of an SSB signal.	7 Marks
	b)	Compare different DSB-SC, AM, SSB system in terms of power efficiency, bandwidth efficiency and receiver complexity.	7 Marks
		(OR)	
4	a)	Explain the generation and applications of Vestigial Side band signals.	7 Marks
	b)	Explain the effect of frequency offset and phase offset in the demodulation of SSB signals.	7 Marks

UNIT-III

5	a)	Derive the expression for a single tone FM signal in terms of Bessel function $J_n(\beta)$.	8 Marks
	b)	A modulating signal $5\cos 30000\pi t$ angle modulates a carrier voltage $10\cos 8\pi 10^6 t$. Determine the bandwidth for FM signal, if K_f = 15 KHz/volt. Find K_p for PM assuming same bandwidth.	6 Marks
		(OR)	
6	a)	Describe the indirect method (Armstrong) of FM generation with suitable example.	8 Marks
	b)	An Angle modulated wave is described by $\Phi(t) = 10 \cos [3x10^6 \pi t + 10\cos 2000 \pi t]$. Calculate i) Power of the modulated signal. ii) The maximum frequency deviation. iii) The maximum phase deviation.	6 Marks

UNIT-IV

7	a)	Distinguish high level and low level AM transmitters. With neat block diagram, explain the principle and operation of high level AM transmitter.	7 Marks
	b)	With the block diagram, explain the principle and operation of super heterodyne receiver. Also discuss the criterion for selection of RF amplifier and IF frequency.	7 Marks
		(OR)	

8	a)	Illustrate the common scheme to study the noise performance of analog modulation systems.	7 Marks
	b)	Discuss Selectivity, Sensitivity, Noise margin and Fidelity of Radio receiver.	7 Marks

UNIT-V

9	a)	With neat block diagram, explain the generation and detection of PPM signals**.**	8 Marks
	b)	Draw the wave forms of PAM, PPM and PWM signals for square wave modulating signal.	6 Marks

(OR)

10	a)	Explain the generation and detection of PAM signals with neat schematics.	8 Marks
	b)	Illustrate TDM multiplexing scheme with neat sketch**.**	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

ELECTRONIC CIRCUIT ANALYSIS AND DESIGN

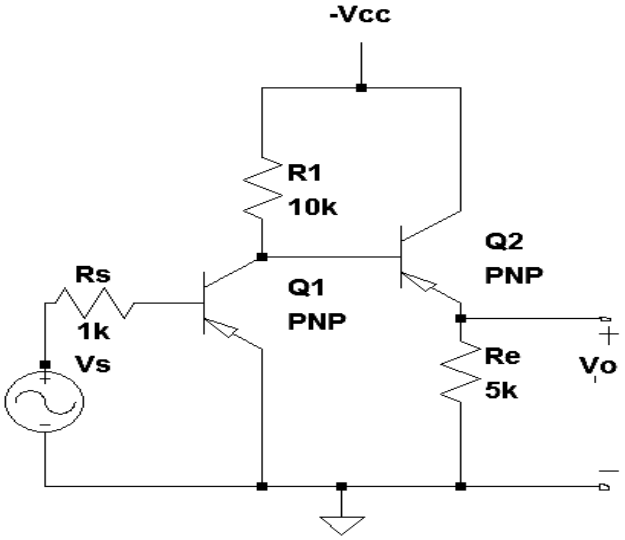
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Find the voltage gain A_{vs} of the amplifier shown in figure h_{ie}=1000 Ω, $h_{re}=10^{-4}$, h_{fe}=50, $h_{oe}=10^{-4}$ A/V. Find R_0'. 10 Marks



b) Write short notes on cascading of amplifiers. 4 Marks

(OR)

2 a) What is Darlington connection? Derive the current gain and input resistance. 7 Marks

b) Differentiate different types of coupling schemes used in multistage amplifiers. 7 Marks

UNIT-II

3 a) Explain the frequency response of amplifier at low and high frequencies. 7 Marks

b) Define F_T, $F\alpha$ and F_β and find relation between F_T and F_β. 7 Marks

(OR)

4 a) Derive the expression for the voltage gain of a common drain FET Amplifier. 7 Marks

b) Sketch the small signal high frequency circuit of CS amplifier and derive the expression for voltage gain. 7 Marks

UNIT-III

5 a) Explain Colpitts oscillator and derive the expression for frequency of oscillation and also mentions its advantages and disadvantages. 10 Marks

b) In a Hartley Oscillator L_2=0.04mH, C=0.004μF. If the frequency of oscillation is 150 KHz, find L_1.neglect mutual Inductance. 4 Marks

(OR)

6 a) Derive the expressions for voltage gain, input impedance and output impedance of a voltage shunt feedback amplifier. 8 Marks

b) Explain the effect of negative feedback on amplifier bandwidth. 6 Marks

UNIT-IV

7	a)	In what way the design features of power transistors different from small signal transistors?	7 Marks
	b)	What reasons will you assign for higher conversion efficiency of Class-B amplifier as compared to Class-A amplifier?	7 Marks

(OR)

8	a)	What do you understand by cross-over distortion? How can it be eliminated in Class-B operation?	6 Marks
	b)	Derive an expression for the efficiency of Class-A power amplifiers.	8 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 800KHz and a band width of 10KHz. What is the value of its Q-factor?	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

ELECTROMAGNETIC THEORY AND TRANSMISSION LINES

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the salient features and applications of Gauss's law.	7 Marks
	b)	Derive the expression for electric field due to volume charge density.	7 Marks
		(OR)	
2	a)	Define electric potential and give the relation between E and V.	7 Marks
	b)	Explain the following terms: i) Homogeneous and isotropic medium. ii) Line, surface and volume charge distributions.	7 Marks

UNIT-II

3	a)	Prove that isolated magnetic charge does not exist.	7 Marks
	b)	Derive the expression for force between two current elements.	7 Marks
		(OR)	
4	a)	Distinguish between scalar and vector magnetic potential.	7 Marks
	b)	Explain about magnetic energy.	7 Marks

UNIT-III

5	a)	What is the inconsistency in Ampere's law? How it is rectified by Maxwell?	7 Marks
	b)	Write Maxwell's equations in integral form and differential form for time varying fields.	7 Marks
		(OR)	
6	a)	Explain the concept of displacement current.	7 Marks
	b)	State and prove electrostatic boundary conditions.	7 Marks

UNIT-IV

7	a)	Derive wave equations for a conducting medium.	7 Marks
	b)	Derive the propagation characterization of electromagnetic waves in free space.	7 Marks
		(OR)	
8	a)	Find the depth of penetration, δ of an electromagnetic wave in copper at f = 100MHz. For copper $\sigma = 5.8 \times 10^7$ mho/m, $\mu_r = 1$, $\in_r = 1$.	7 Marks
	b)	Discuss about elliptical polarization of a wave.	7 Marks

UNIT-V

9	a)	Discuss about Primary and Secondary constants of a Transmission Line.	7 Marks
	b)	Derive the expression for the input impedance of a lossless transmission lines.	7 Marks
		(OR)	
10	a)	Explain the characteristics of Smith chart and its applications.	7 Marks
	b)	Discuss how $\lambda/2$, $\lambda/8$ lines act as circuit element.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

SIGNALS AND SYSTEMS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Show that the product of two even signals or of two odd signals is an even signal and that the product of an even and an odd signal is an odd signal. 8 Marks

b) Find and sketch the first derivatives of the following signals: 6 Marks
i) **x (t) = u (t) - u (t - a) , a > 0**
ii) **x (t) = t [u (t) - u (t - a)] , a > 0**

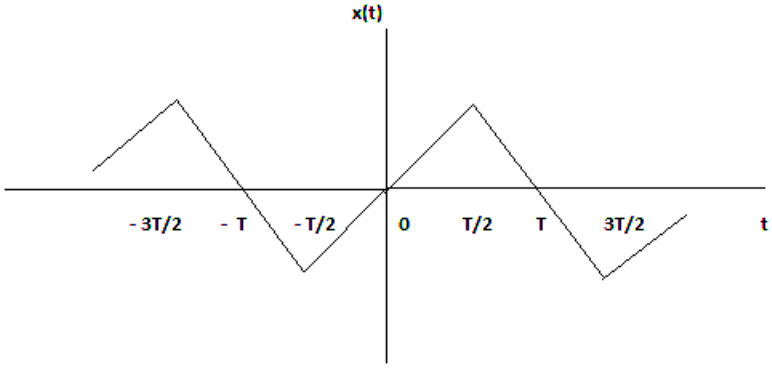
(OR)

2 a) Compute the output y(t) for a continuous time LTI system whose impulse response h(t) and the input x(t) are given by $\mathbf{h(t) = e^{-\alpha t}\, u(t)}$ 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 symmetrical gate pulse and sketch the spectrum. 8 Marks

b) State and prove following properties of Fourier transform 6 Marks
i) Time shifting. ii) Differentiation in frequency domain

UNIT-III

5 a) Prove that the correlation and convolution functions are identical for even Signals. 7 Marks

b) Explain detection of periodic signals in the presence of noise by correlation. 7 Marks

(OR)

6 a) State and prove sampling theorem for band limited signals using analytical approach. 8 Marks

b) Determine the Nyquist sampling rate and Nyquist sampling interval for the signals: i) sinc(100*nt*). 6 Marks
ii) sinc(100 *nt*) + sinc(50 *nt*).

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 7 Marks
$\boldsymbol{X(s) = (7s + 10) / [s(s + 2)]}$

(OR)

8 a) Describe the ROC of the signal $\boldsymbol{x(t) = e^{-b|t|}}$ for $b > 0$ and $b \leq 0$. 7 Marks

b) Find the inverse Laplace transform of $\boldsymbol{X(s) = (-5s-7) / (s+1)(s-1)(s+2)}$ 7 Marks

UNIT-V

9 a) Determine Z-transform, pole-zero locations and sketch of ROC of following signal. 7 Marks

$$\boldsymbol{x(n) = (1/2)^n u(n) + (-1/3)^n u(n)}$$

b) Determine the inverse Z transform of $\boldsymbol{X(z) = ln\ (1+az^{-1})}$; ROC $|z| > a$. 7 Marks

(OR)

10 a) Determine the Z transform and ROC of $\boldsymbol{x(n) = a^n u(n) - b^n u(-n-1)}$. 7 Marks

b) Using the power series expansion technique, find the inverse Z transform of 7 Marks
$X(z) = \dfrac{z}{2z^2 - 3z + 1}; ROC\ |Z| < \dfrac{1}{2}$.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

SWITCHING THEORY AND LOGIC DESIGN

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain Canonical and Standard forms with suitable examples. 6 Marks

b) Implement the INVERTER gate, OR gate and AND gate using 8 Marks
i) NAND gate. ii) NOR gate.

(OR)

2 a) Simplify the following Boolean expressions and realize using AND-OR-NOT logic 8 Marks
i) $\overline{\overline{A+B}+C+\overline{A\overline{B}}}$
ii) $\overline{A}BC+A\overline{B}C+AB\overline{C}+ABC$

b) Prove the Boolean relationships: 6 Marks
i) $A+B+C+D+\overline{ABCD}=1$
ii) $(A+B)(A+C)(B+C)=(A+B)(A+C)$

UNIT-II

3 Obtain the minimal SOP and POS of the following functions using K- Maps. 14 Marks
i) $F_1(A, B, C, D) = \sum_m(1, 3, 7, 11, 15) + \sum_d(0, 2, 5)$
ii) $F_2(A, B, C, D) = \Pi_M(4, 5, 6, 7, 8, 12) + \Pi_d(1, 2, 3, 9, 11, 14)$

(OR)

4 Simplify the following Boolean function using Quine Mc'Clusky method. 14 Marks
$F(A, B, C, D) = \sum_m(0, 1, 6, 7, 8, 9, 13, 14, 15)$

UNIT-III

5 a) Design a BCD to excess-3 code converter. 8 Marks

b) Explain the operation of 4-bit carry look ahead adder. 6 Marks

(OR)

6 a) Design and implement a 4-bit BCD to decimal decoder. 8 Marks

b) Use a multiplexer having three data select inputs to implement the logic function 6 Marks
$F = \Sigma_m(0, 1, 2, 3, 4, 10, 11, 14, 15)$.

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) Compare PAL and PLA. 6 Marks

b) A combinational circuit is defined by the functions. 8 Marks

$$F_1(A, B, C) = \sum(3, 5, 6, 7)$$

$$F_2(A, B, C) = \sum(0, 2, 4, 7)$$

Implement the circuit with a PLA.

(OR)

10 Explain in detail procedure of asynchronous circuit design with an example. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the BJT simplified hybrid model for small signal analysis.	7 Marks
	b)	Derive the CE short circuit current gain at high frequencies.	7 Marks
		(OR)	
2	a)	Draw the circuit diagram and frequency response of an RC coupled amplifier. Further explain the role of coupling and bypass capacitors.	7 Marks
	b)	Derive the current gain of a CE amplifier with resistive load at high frequencies.	7 Marks

UNIT-II

3	a)	Draw the block diagram of a feedback system and explain the role of different blocks.	7 Marks
	b)	Draw the circuit diagram of a RC phase shift oscillator using FET. Derive the expression for frequency of oscillations.	7 Marks
		(OR)	
4	a)	Describe the general characteristics of negative feedback amplifiers.	7 Marks
	b)	Explain the Barkhausein criteria for sustained oscillations.	7 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)	Define unit-step function, ramp function and impulse function. Show that a pulse is combination of unit-step functions.	8 Marks
	b)	What is meant by linear wave shaping?	3 Marks
	c)	Why a capacitor in a high-pass RC circuit is named as blocking capacitor?	3 Marks
		(OR)	
8	a)	Explain how clipping at two independent levels can be achieved.	8 Marks
	b)	Explain positive peak voltage limiters below reference level.	6 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

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

DATA COMMUNICATIONS

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about different standard organizations that govern data communications.	7 Marks
	b)	With the aid of suitable block diagram, explain about different circuits employed for data communications.	7 Marks
		(OR)	
2	a)	Write short notes on complex signals.	7 Marks
	b)	Describe relation between bit rate, bandwidth and baud for 16-PSK.	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 mean by companding? Explain PCM system with analog companding.	7 Marks
	b)	Explain relationship between dynamic range, resolution and number of bits in a PCM code.	7 Marks
		(OR)	
6	a)	With the aid of block diagram, explain about two channel PCM-TDM system.	7 Marks
	b)	Explain different mechanism that can be employed to achieve frame synchronization.	7 Marks

UNIT-IV

7	a)	Define Subscriber Loop. Explain in brief about working of standard Telephone Set.	7 Marks
	b)	Write down the functional mechanism of cellular telephone systems and cordless telephones systems.	7 Marks
		(OR)	
8	a)	What is a telephone set? Describe in detail with a neat diagram, the various functional components of a standard telephone set.	7 Marks
	b)	Define Crosstalk. Explain in detail about Private-Line circuits.	7 Marks

UNIT-V

9	a)	Explain in detail about different types of interferences that can be observed in cellular telephone.	7 Marks
	b)	Briefly describe N-AMPS cellular telephone system.	7 Marks
		(OR)	
10	a)	Explain about any four data communication character codes and their significance in data communications.	7 Marks
	b)	With the aid of suitable example, prove that hamming code is successful in detecting the one bit transmission errors.	7 Marks

CODE No.:14BT40501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

COMPUTER ORGANIZATION

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Develop a flow chart for the Booth's multiplication algorithm.	7 Marks
	b)	Interpret Booth's multiplication algorithm to an example **-11 * 15** using 8 bit numbers.	7 Marks
		(OR)	
2	a)	Discuss about various micro operations.	7 Marks
	b)	Write about register transfers and register transfer language with an example.	7 Marks

UNIT-II

3	a)	Discuss about Wilke's Micro programmed model with flow chart.	7 Marks
	b)	Discuss about the design issues of instructions and its elements in detail.	7 Marks
		(OR)	
4	a)	Discuss in detail about computer registers.	7 Marks
	b)	Write about hardwired control unit in detail.	7 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		List various I/O techniques and explain any two in detail.	14 Marks

UNIT-IV

7	a)	Explain Direct Associative, Set Associative and Fully Associative mapping with an example in cache memories.	7 Marks
	b)	Compare and contrast various Read Only Memories (ROM).	7 Marks
		(OR)	
8	a)	List various secondary storage memories and explain any one of them.	7 Marks
	b)	List different types of main memories and compare them.	7 Marks

UNIT-V

9	a)	Explain instruction pipeline with an example.	7 Marks
	b)	What are the interconnection structures and explain any one of them in detail.	7 Marks
		(OR)	
10	a)	Discuss Inter Process Communication in detail.	7 Marks
	b)	Explain Arithmetic Pipelining processing with an example.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

DATABASE MANAGEMENT SYSTEMS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the characteristics of database system.	8 Marks
	b)	Explain in detail about the three-schema architecture of DBMS.	6 Marks
		(OR)	
2	a)	Explain about various constraints used in ER-model.	6 Marks
	b)	Discuss in detail about various attributes used in ER-model with suitable examples.	8 Marks

UNIT-II

3		Explain in detail about various key constraints used in database system.	14 Marks
		(OR)	
4	a)	Explain different relational algebraic operations with example.	8 Marks
	b)	Write short notes on: i) DDL ii) DML iii) Database schema.	6 Marks

UNIT-III

5	a)	Differentiate between independent and correlated nested queries.	6 Marks
	b)	Explain the following with examples. i) EXIST ii) IN iii) CONCATENATE iv) UNION	8 Marks
		(OR)	
6	a)	State the Armstrong inference rules. Provide suitable examples to describe each.	6 Marks
	b)	Show how to preserve functional dependencies during decomposition.	8 Marks

UNIT-IV

7	a)	Draw transaction state diagram and describe each state that a transaction goes through during its execution.	8 Marks
	b)	What is serializability? Explain it.	6 Marks
		(OR)	
8	a)	Explain in detail about timestamp based concurrency control techniques.	7 Marks
	b)	Write and explain optimistic concurrency control algorithm.	7 Marks

UNIT-V

9	a)	Discuss in detail about cluster and multilevel indexes.	8 Marks
	b)	Explain in detail about internal hashing techniques.	6 Marks
		(OR)	
10	a)	Explain in detail about indexed accessing methods.	7 Marks
	b)	Explain B+ tree operations with examples.	7 Marks

CODE No.:14BT40503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write the non-recursive algorithm for finding the Fibonacci sequence and derive its time complexity.	7 Marks
	b)	List the two different types of recurrence.	7 Marks
		(OR)	
2	a)	Compare **Big-oh** notation and **Little-oh** notation. Illustrate with an example.	7 Marks
	b)	Explain the representations of disjoint set union with examples.	7 Marks

UNIT-II

3	a)	Explain the Strassen's matrix multiplication.	7 Marks
	b)	What are Biconnected components? Explain with an example.	7 Marks
		(OR)	
4	a)	Write an algorithm of Quick sort and explain in detail.	7 Marks
	b)	Compare Breadth First Search and Depth First Search traversals.	7 Marks

UNIT-III

5	a)	Explain single source shortest path problem with example.	7 Marks
	b)	Explain Prim's algorithm with a suitable example.	7 Marks
		(OR)	
6	a)	What do you mean by forward and backward approach of problem solving in dynamic programming? List the features of dynamic programming.	7 Marks
	b)	Describe the travelling salesman problem and explain how it is solved using dynamic programming.	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) Supplementary Examinations May - 2018

OBJECT ORIENTED PROGRAMMING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the different data types and their ranges in JAVA?	7 Marks
	b)	Write a JAVA program to find the biggest number present in the given array of ***n*** numbers.	7 Marks
		(OR)	
2	a)	Explain the OOP paradigm.	7 Marks
	b)	Write a JAVA program to accept five command line arguments and perform sorting in increasing order and display them.	7 Marks

UNIT-II

3	a)	Differentiate Method Overloading and Method Overriding with the help of suitable JAVA Programs.	7 Marks
	b)	Explain the concept of Inheritance with the help of Base class and Sub class.	7 Marks
		(OR)	
4	a)	Explain different forms of Inheritance with examples.	7 Marks
	b)	Discuss about the benefits of Inheritance with suitable examples.	7 Marks

UNIT-III

5	a)	Explain about the significance of Exceptional Handling in OOP.	7 Marks
	b)	Discuss about the Exception Hierarchy in detail.	7 Marks
		(OR)	
6	a)	Write a JAVA program that demonstrates the usage of ' try, catch and throw ' and explain.	7 Marks
	b)	Write short note on built in Exceptions in JAVA.	7 Marks

UNIT-IV

7	a)	Explain the life cycle of an Applet.	7 Marks
	b)	Design an Applet to display the status of a checkbox on click of a button.	7 Marks
		(OR)	
8		Design a basic calculator using Applets by implementing appropriate controls.	14 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

CODE No.:14BT41501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

COMPUTER GRAPHICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define Computer Graphics. Explain the application of Computer Graphics.	7 Marks
	b)	Explain in detail about the Random Scan method.	7 Marks
		(OR)	
2	a)	Explain about the Non-zero winding number rule.	7 Marks
	b)	Explain about the Midpoint Circle algorithm.	7 Marks

UNIT-II

3		Explain in detail about the translation transformation with an example.	14 Marks
		(OR)	
4		Explain in detail about the Cohen Sutherland Line Clipping algorithm.	14 Marks

UNIT-III

5	a)	Discuss about the role of parametric functions in curve generation.	7 Marks
	b)	Draw the Bernstein polynomials. Illustrate their role in Bezier curve generation.	7 Marks
		(OR)	
6	a)	What are the characteristics of parametric cubic curves? What are its advantages?	7 Marks
	b)	Derive the basis matrix (NB) for Bezier curve.	7 Marks

UNIT-IV

7		Explain in detail about; i) Rotations with Quaternions. ii) Reflections and shear Transformations.	14 Marks
		(OR)	
8		Explain in detail about 3D Transformations Pipeline from Modelling Co-ordinates to Final device Co-ordinates.	14 Marks

UNIT-V

9		Explain about Back Face Detection and Octre method.	14 Marks
		(OR)	
10		Explain about the Gauraud shading and Phong shading.	14 Marks

CODE No.:14BT50201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

CONTROL SYSTEMS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

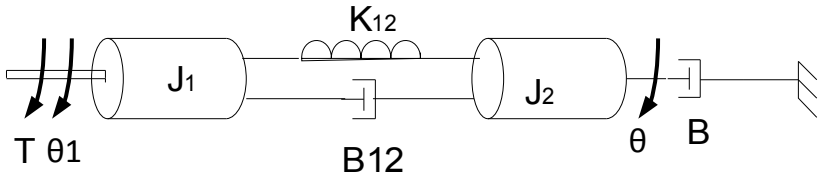
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) What are the effects of feedback on sensitivity and external noise? 7 Marks

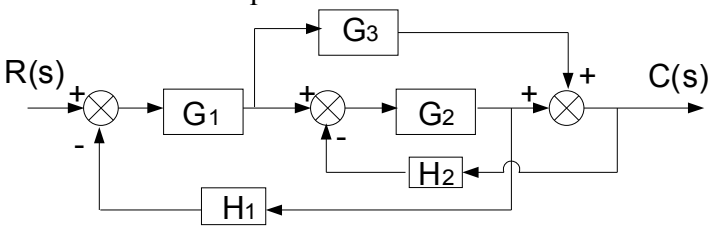
b) For the mechanical system, draw the electrical analogous circuits based on Torque-Voltage and Torque-Current analogy along their equations. 7 Marks



(OR)

2 a) Develop the block diagram for armature controlled DC motor. 7 Marks

b) Determine the overall transfer function for the system shown in the figure using block diagram reduction technique. 7 Marks



UNIT-II

3 a) A unity feedback system is characterized by a open loop transfer function G(s)=K/s(s+10). Determine the gain K so that the system will have a damping ratio of 0.5. For this value of K determine settling time, peak overshoot and time to peak overshoot for unit step input. 8 Marks

b) Find all steady state errors for open loop transfer function with unity feedback given by G(s)= 10/s(0.1s+1). 6 Marks

(OR)

4 a) A unity feedback system is characterized by the open loop transfer function $G(s)=1000/s^2(s+1)(s+20)$. 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. 7 Marks

b) The open loop transfer function of unity feedback control system is given by G(s)=K/(Ts+1). If the maximum response is obtained at t = 4sec and maximum value is 1.26, find the value of K and T. 7 Marks

UNIT-III

5 a) Determine the stability of the control system with characteristics equation $s^3 + 2s^4 + 2s^3 + 4s^2 + s + 2 = 0$ using Routh Hurwitz Criterion. 7 Marks

b) Determine the range of values of K such that the characteristic equation 7 Marks

$s^3 + 3(K + 1)\, s^2 + (7K + 5)\, s + (4K + 7) = 0$ has roots more negative than s = –1.

(OR)

6 Sketch the root locus diagram for the following open loop transfer function: 14 Marks

$$\frac{K}{S(S+4)(S^2+4S+20)}.$$

UNIT-IV

7 Sketch the bode plot of the system with open loop transfer function $G(s)=1/s^2(1+s)(1+2s)$. Find gain margin and phase margin of the system. 14 Marks

(OR)

8 a) State and explain Nyquist stability criterion to determine the stability of a system. 6 Marks

b) Sketch the polar plot and determine gain margin and phase margin for open loop transfer function of unity feedback system **G(s) = 1/s(s+2)(s+4)**. 8 Marks

UNIT-V

9 a) Obtain state variable representation of a field control DC motor. 6 Marks

b) Determine whether the following system is completely state controllable and observable using kalman's test. 8 Marks

$$A = \begin{bmatrix} 0 & 1 & 1 \\ 0 & 0 & 1 \\ -1 & -3 & -3 \end{bmatrix} \quad B = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} \quad C = \begin{bmatrix} 0 & 1 & -1 \end{bmatrix}$$

(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. 7 Marks

$$A = \begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 0 & 0 & 3 \end{bmatrix}$$

b) What are the advantages of state variable analysis? Also write the properties of state transition matrix. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

PULSE AND DIGITAL CIRCUITS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	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
		(OR)	
2	a)	Describe the response of the high pass RC circuit for a ramp input.	4 Marks
	b)	Explain the response of high pass RC circuit for symmetrical square wave.	10 Marks

UNIT-II

3	a)	Distinguish between positive and negative clipper.	6 Marks
	b)	Explain the operation of shunt biased negative clipper with transfer characteristics.	8 Marks
		(OR)	
4	a)	Draw and explain the operation of positive clamper circuit with waveforms.	8 Marks
	b)	State and prove clamping circuit theorem.	6 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 in detail about basic principles of Miller and Bootstrap time-base generators.	7 Marks
	b)	With the help of a neat circuit diagram, explain the working of a simple current sweep.	7 Marks
		(OR)	
8	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

UNIT-V

9	a)	Explain the basic principle of gates using series and shunt switch.	8 Marks
	b)	Describe FET as Chopper switch.	6 Marks
		(OR)	
10	a)	Compare different logic families in digital circuits.	8 Marks
	b)	Describe NOT gate operation by using transistor.	6 Marks

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CODE No.:14BT51501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

OPERATING SYSTEMS

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Discuss different types of operating systems with suitable examples.	14 Marks
		(OR)	
2		Briefly explain various scheduling algorithms.	14 Marks

UNIT-II

3	a)	Explain the software solution for critical section problem.	7 Marks
	b)	What is synchronization hardware?	7 Marks
		(OR)	
4	a)	Explain the system model for deadlocks.	7 Marks
	b)	How do you prevent the occurrence of deadlocks?	7 Marks

UNIT-III

5		Compare the main memory organization schemes of contiguous memory allocation, pure segmentation, and pure paging with respect to the following issues: i) External fragmentation. ii) Internal fragmentation. iii) Ability to share code across processes.	14 Marks
		(OR)	
6		Explain page replacement algorithms with suitable examples.	14 Marks

UNIT-IV

7	a)	Describe File structure, File attributes and File operations in detail.	10 Marks
	b)	Explain the two level and three level structured directory.	4 Marks
		(OR)	
8		Write about stable storage and tertiary storage.	14 Marks

UNIT-V

9	a)	Explain in detail about application I/O interface.	7 Marks
	b)	Explain various steps involved in the I/O request.	7 Marks
		(OR)	
10	a)	Describe the goals of protection in operating system.	7 Marks
	b)	Explain how access matrix can be used for providing protection.	7 Marks

CODE No.:14BT4HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

BUSINESS COMMUNICATION AND PRESENTATION SKILLS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Explain the major functions of oral communication with examples.	14 Marks
	(OR)	
2	What are the primary roles of a manager? How many of these roles are essential towards making a business successful?	14 Marks

UNIT-II

3	Discuss differences in paralanguage of people in various cultures.	14 Marks
	(OR)	
4	'Nonverbal communication is more important than verbal communication'. Discuss.	14 Marks

UNIT-III

5	Discuss briefly the structural elements of a business letter.	14 Marks
	(OR)	
6	How do you differentiate business letter from personal letter. Give examples.	14 Marks

UNIT-IV

7	How is group discussion different from debate? What are the Do's and Don'ts of group discussion?	14 Marks
	(OR)	
8	Your friend maintains that group discussion may not be a very reliable way of determining how industry ready a candidate is. In other words group discussion cannot establish a candidate's readiness for the job. How will you contradict him/her?	14 Marks

UNIT-V

9	Write a resume for the post of a Software Engineer in New Tech Solutions. Write a covering letter also.	14 Marks
	(OR)	
10	Write the Do's and Don'ts in facing interviews. What traits does an employer look for in a candidate while interviewing him?	14 Marks

CODE No.:14BT4HS02 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

PROFESSIONAL ETHICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write short notes on: i) Moral residue ii) Moral absolutism	6 Marks
	b)	What is meant by professional conscience and right of conscientious refusal?	8 Marks
		(OR)	
2	a)	Discuss the criteria to be met, to call a job or occupation as profession.	6 Marks
	b)	Briefly discuss about types of Inquires.	8 Marks

UNIT-II

3	a)	What are the prima facie duties?	6 Marks
	b)	List and explain various models of professional roles.	8 Marks
		(OR)	
4	a)	How does the "ethical egoism" different between narrower and wider form of self-interest?	6 Marks
	b)	State the theories which are responsible for morality / right action.	8 Marks

UNIT-III

5	a)	How do the 'code of ethics' provide discipline among the engineers?	6 Marks
	b)	"Just like the results of experiments, the final outcome of engineering projects too is generally uncertain". Discuss.	8 Marks
		(OR)	
6	a)	Explain in detail the powerful support and proper role of the law in engineering.	6 Marks
	b)	"The role of engineering as an experiment in the process of designing a product". Justify.	8 Marks

UNIT-IV

7	a)	Discuss human rights, professional rights and employee rights in an engineering field.	6 Marks
	b)	Discuss about Collegiality and Loyalty.	8 Marks
		(OR)	
8	a)	Explain the respect for authority in detail.	6 Marks
	b)	List the advantages and limitations of collective bargaining.	8 Marks

UNIT-V

9	a)	What is contextualism (moral relationalism)?	6 Marks
	b)	With reference to environmental ethics, why are engineers considered to be agents of changes?	8 Marks
		(OR)	
10	a)	When do engineers and expert witnesses abuse their profession?	6 Marks
	b)	Discuss the moral responsibilities of corporates and individuals operating in other	8 Marks

counties with suitable examples.

CODE No.:14BT5HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Define supply and describe its determinants with suitable examples. 14 Marks

(OR)

2 Define elasticity and explain the various types of elasticity of demand. 14 Marks

UNIT-II

3 What are the different types of production functions generally encountered by managerial economics? Discuss the assumptions and main features of each of them. 14 Marks

(OR)

4 What is Break-even-analysis? What are the various determinants of Break-even-analysis? 14 Marks

UNIT-III

5 Distinguish between the pricing policies followed by the big and small businesses. 14 Marks

(OR)

6 What do you mean by capital? Write about types of capital and their sources. 14 Marks

UNIT-IV

7 Define accountancy and explain golden rules of accounting with suitable examples. 14 Marks

(OR)

8 The following data was furnished by M/s Rao&Rao traders for the month of July 2016: 14 Marks

Date	Particulars	Rs.
01.07.2016	Capital introduced into the business	1,80,000
02.07.2016	Good sold on credit to Murty	24,000
03.07.2016	Goods purchased from Ram on credit	9,000
04.07.2016	Purchased furniture and paid through cheque	60,000
08.07.2016	Cash paid for son's college fee	3,000
09.07.2016	Office equipment purchased	12,000
12.07.2016	Goods returned to Ram	2,400
15.07.2016	Goods returned from Murty	1,500
18.07.2016	Cash deposited into bank	60,000
22.07.2016	Office expenses paid	13,500
26.07.2016	Cash drawn from bank for office use	21,000
28.07.2016	Salaries paid	14,400
30.07.2016	Wages paid	36,000

You are required to journalize the above transactions in the books of

M/s Rao&Rao traders.

UNIT-V

9 Explain about manual accounting and computerized accounting. 14 Marks

(OR)

10

Debit Balance	Amount (Rs.)	Credit Balance	Amount (Rs.)
Opening stock	5,200	Capital	16,000
Purchases	15,500	Creditors	2,000
Sales Returns	300	Sales	20,000
Debtors	4,000	Commission	3,140
Buildings	5,000	Rent	2,000
Machinery	4,000		
Furniture	1,600		
Bills receivables	2,000		
Salaries	1,600		
Tax	200		
Insurance	300		
Carriage on purchases	900		
Trade expenses	300		
Travelling expenses	440		
Wages	1000		
Cash	800		

14 Marks

Adjustments:

i) Closing stock (31.12.2015) Rs.12,000.
ii) Rent due but not received Rs.500.
iii) Commission to the extent of Rs.140 received in advance.
iv) Charge depreciation @ 10% p.a. on machinery.

CODE No.:14BT5HS02 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

MANAGEMENT SCIENCE

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Briefly discuss the principles of management. 14 Marks

(OR)

2 a) What is systems approach? Why systems approach is inevitable for efficient management? 7 Marks

b) What is corporate planning? How is it carried out? 7 Marks

UNIT-II

3 a) Define inventory. Describe its types. Explain the inventory costs associated with classical EOQ model. 7 Marks

b) Define quality. Explain the factors affecting quality. 7 Marks

(OR)

4 a) Describe the operating characteristic curve showing its salient points. 7 Marks

b) A box contains **2%** defectives. A sample of **100** units is taken from the box. What is the probability of getting no defective in the sample? 7 Marks

UNIT-III

5 Explain the importance and role of a HR manager in an organization. 14 Marks

(OR)

6 Explain the McGregor's X and Y theories. Discuss the appropriateness of both the theories taking suitable situations. 14 Marks

UNIT-IV

7 From the data given in the table below, calculate the optimum project duration and cost after crashing the network to the optimum level. 14 Marks

Activity	Normal time (days)	Crash time (days)	Normal cost (Rs.)	Crash cost (Rs.)
1-2	8	6	100	200
1-3	4	2	150	350
2-4	2	1	50	90
3-4	5	1	100	200
4-5	3	1	80	100
2-5	10	5	100	400

(OR)

8 A small project is composed of seven activities whose time estimates are listed in the table below:

Activity	Estimated duration (weeks)		
	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

(a) Draw the network. 3 Marks

(b) Find the expected duration and variance of each activity. 4 Marks

(c) Calculate the variance and standard deviation of project length. 7 Marks
What is the probability that the project will be completed at least 4 weeks earlier than expected?

UNIT-V

9 Explain in detail the characteristics of JIT. 14 Marks

(OR)

10 Explain in detail about Enterprises Resource Planning. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1	a)	Write the pseudo code for find factorial of a number using recursion and analyze the space complexity of it.	7 Marks
	b)	Define and write the algorithms for union and find operations.	7 Marks
		(OR)	
2		Suppose we start with n sets, each containing a distinct elements i) Show that if u unions are performed, then no set contains more than n+ 1 element. ii) Prove that at most n-1 union can be performed before the number of sets becomes 1.	14 Marks

UNIT-II

3	a)	Let T(n,e) and S(n,e) be the maximum time and maximum additional space taken by the algorithm Breadth First Search on any graph G with n vertices and e edges. Then show that $T(n, e) = \theta(n + e)$ and $s(n, e) = \theta(n)$. If G is represented by its adjacency lists.	7 Marks
	b)	Show that time complexity of quick sort in worst case is $\theta(nlogn)$ if we select the partition point at random.	7 Marks
		(OR)	
4	a)	Define level order traversal and write an algorithm to traverse a binary tree in the level order.	7 Marks
	b)	Explain Strassen's algorithm for matrix multiplication.	7 Marks

UNIT-III

5	a)	Write Greedy algorithm to generate the shortest path.	7 Marks
	b)	Explain the Kruskal's algorithm with an example.	7 Marks
		(OR)	
6	a)	Explain matrix chain multiplication with an example.	7 Marks
	b)	Solve the following **0/1** Knapsack problem using dynamic programming. P = (11,21,31,33) , w = (2,11,22,15), c = 40, n = 4	7 Marks

UNIT-IV

7	a)	Draw and explain the portion of the Tree for 4-Quees problem that is generated during backtracking.	10 Marks
	b)	Explain the applications of Backtracking.	4 Marks
		(OR)	
8	a)	Write an algorithm of LCBB to find the minimum Cost Answer Node.	7 Marks
	b)	Describe explicit constraints and implicit constraints with examples.	7 Marks

UNIT-V

9	a)	Explain the Clique problem and write the algorithm for the same.	7 Marks
	b)	Differentiate between NP-Complete and NP-Hard problems.	7 Marks
		(OR)	
10	a)	Explain the Non deterministic sorting and searching algorithms.	7 Marks
	b)	What is meant by Halting problem and explain with an example.	7 Marks

CODE No.:14BT50101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

STRUCTURAL ANALYSIS - II

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 A uniformly distributed load of 25kN/m and 20m long crosses a girder of span 16m. Calculate the maximum shear force and bending moment at 0, 4, 8, 12 and16m from the left end support and construct the diagrams. 14 Marks

(OR)

2 Two wheel loads of 20kN and 10kN at a fixed distance apart of 3m cross a beam of 12m span. Draw the influence line for bending moment and shear force for a point 4m from the left abutment and find the maximum bending moment and shear force at that point. 14 Marks

UNIT-II

3 Analyze the continuous beam shown in Fig. 1 slope deflection method, draw BMD and SF diagrams. 14 Marks

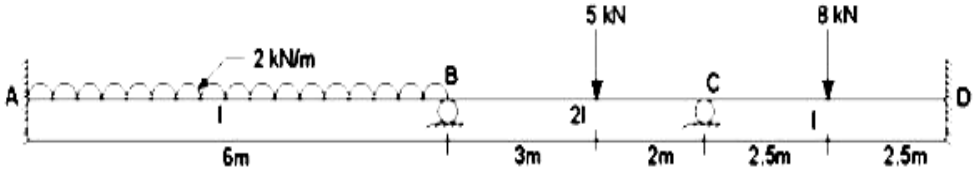

Fig. 1

(OR)

4 Analyze the beam shown in Fig. 2 by moment distribution method and draw SF and BMD diagrams due to following support settlements 0.005 and 0.010 at A and C respectively. 14 Marks

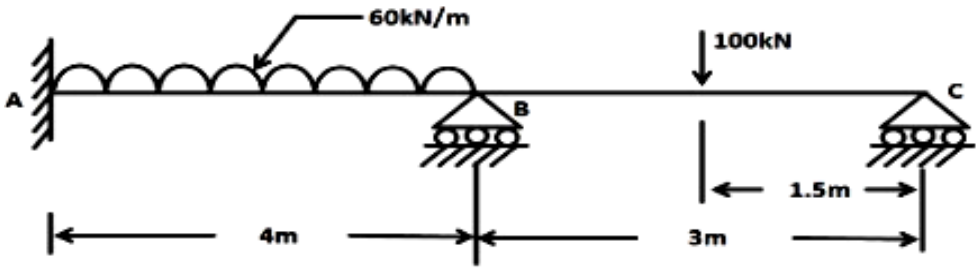

Fig. 2

UNIT-III

5 Analyse the Portal frame shown in Fig. 3 by Kani's method and sketch the BMD. 14 Marks

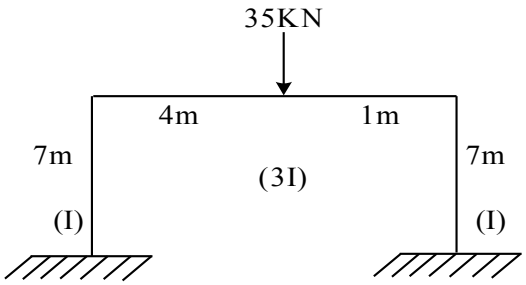

Fig. 3

(OR)

6 a) Derive the strain energy in linear elastic systems for flexural loading. 7 Marks

b) Calculate the slope at ends of a simply supported beam carrying a U.D.L. w per unit length over the whole span. 7 Marks

UNIT-IV

7 Analyze the building frame shown in Fig. 4 for vertical loads using approximate methods. 14 Marks

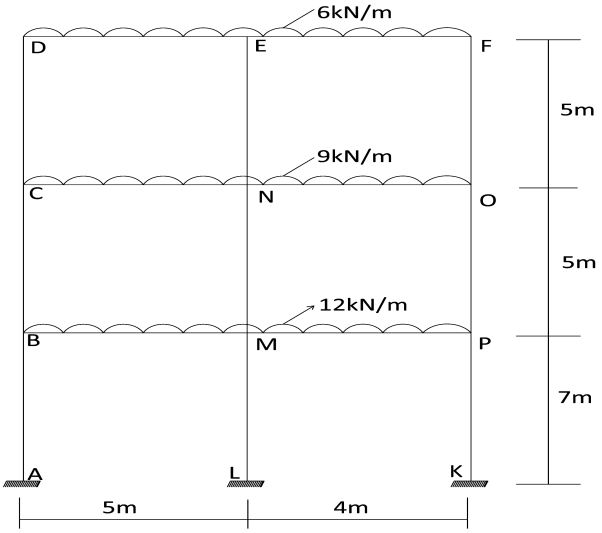

Fig. 4

(OR)

8 Analyze the building frame shown in Fig. 5 using cantilever method. 14 Marks

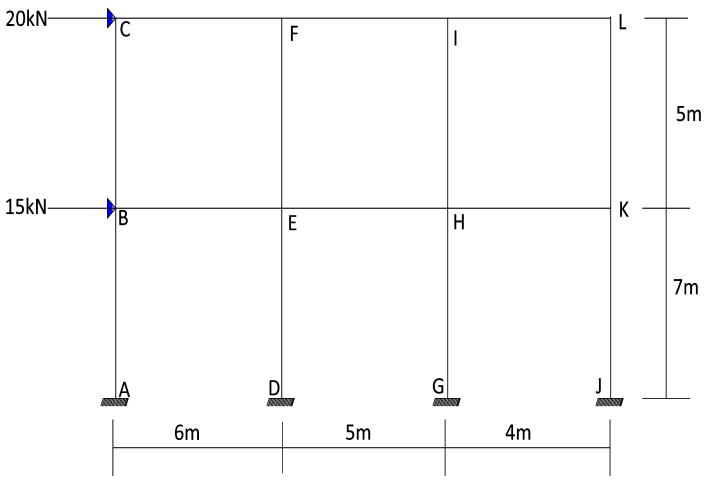

Fig. 5

UNIT-V

9 Find the force in the member BC of the frame loaded as shown in Fig. 6. All the members have the same cross-sectional area. 14 Marks

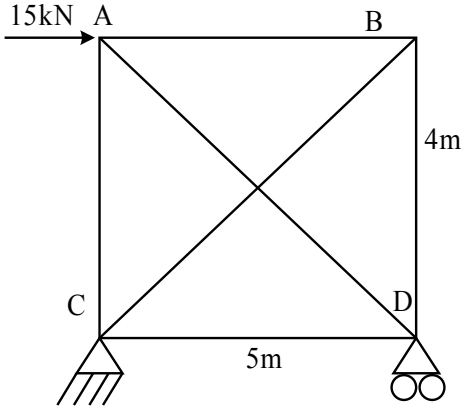

Fig. 6

(OR)

10 Analyse the truss shown in Fig. 7. AE is constant. 14 Marks

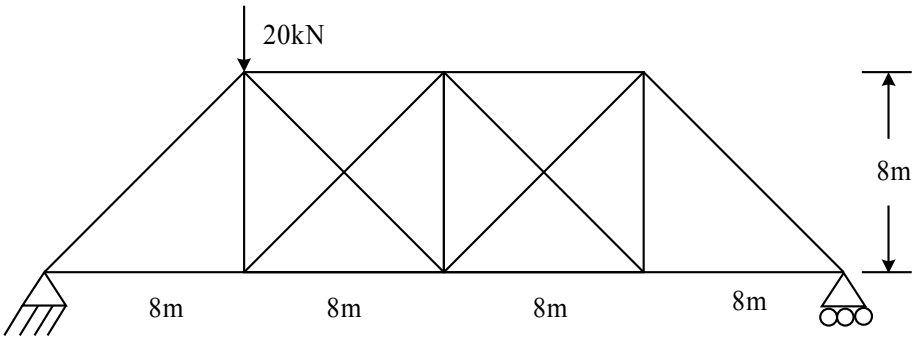

Fig. 7

CODE No.:14BT50102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

REINFORCED CEMENT CONCRETE STRUCTURES-I

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Find the stress block parameters of a singly reinforced beam. 7 Marks

b) A singly reinforced rectangular beam 230mm x 600mm effective depth is reinforced with 3 no's 25mm diameter bars. Find out the factored moment of resistance of the section. The materials are M20 and Fe415 grades. 7 Marks

(OR)

2 a) Determine the moment of resistance of a balanced section from basic principles. 7 Marks

b) Find the moment of resistance of a beam section 230mm x 560mm effective depth. It is reinforced with 3 no's 20mm diameter bars. The materials are M20 grade concrete and Fe415 grade steel. 7 Marks

UNIT-II

3 Design a rectangular beam of simply supported beam of span 6m, if the super imposed load is 30kN/m and width of support is 230mm each. Use M20 grade concrete and Fe415 steel. 14 Marks

(OR)

4 A doubly reinforced beam of size 230mm wide and 550mm effective depth is reinforced with 3 no's 20mm diameter as compression reinforcement and 6 no's 20mm diameter as tension steel at an effective cover of 40mm on both the sides. Find the safe UDL on the beam, if it is simply supported over an effective span of 4.5m. Use M20 grade concrete and Fe415 steel. 14 Marks

$\frac{d'}{d}$	0.05	0.10
Fe415 (f_{sc}) N/mm²	355	353

UNIT-III

5 A reinforced concrete column has an effective length of 2.80m. It carries an axial load of 1800kN. Design the column using M20 concrete and Fe415 steel. 14 Marks

(OR)

6 Design a circular column to carry an axial load of 2000kN. The column has an effective length of 3m. Use M20 concrete and Fe415 steel. 14 Marks

UNIT-IV

7 Design a square footing to support a column of 350mm x 350mm. The column carries a load of 850kN. The allowable soil pressure is 150kN/m². Use M20 concrete and Fe415 steel for footing. Assume column is reinforced with 8 - 25mm bars. 14 Marks

(OR)

8	Design a reinforced concrete rectangular combined footing for two columns each 400mm x 400mm located 4m between centres. Each column carries an axial load of 1200kN. The safe bearing capacity of the soil is 250kN/m². Use M25 concrete and Fe415 steel.	14 Marks

UNIT-V

9	Design a RCC floor slab for a room having inside dimensions 6m x 3.5m restrained an all the four edges if the super imposed service load is 4kN/m². The thickness of wall is 300mm.	14 Marks

(OR)

10	A simply supported RCC slab for a room of clear dimensions 3.5m x 9m width of supporting wall is 300mm. The live load on slab is 3.5kN/m² and floor finishes as 1.5 kN/m². Design the slab using M20 and Fe415 grades of concrete and steel.	14 Marks

CODE No.:14BT50103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

WATER SUPPLY ENGINEERING

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss briefly importance of water supply engineering.	7 Marks
	b)	Enumerate various sources of water. Discuss and compare the quality and quantity of the sources.	7 Marks
		(OR)	
2	a)	Explain different water diseases normally occur with polluted water supply.	7 Marks
	b)	What is meant by design period of water supply project? What factors affect the design period? Give typical values of design periods of various water supply units.	7 Marks

UNIT-II

3	a)	Discuss the various methods of distribution systems used in water supply schemes.	7 Marks
	b)	Explain the methods used for arriving at the storage capacity of service reservoirs.	7 Marks
		(OR)	
4	a)	Discuss the various types of distribution networks used in water supply emphasizing their merits and demerits.	7 Marks
	b)	Write notes on: i) Types of valves ii) Pipe materials	7 Marks

UNIT-III

5	a)	Sketch the various units in a water treatment plant and list the functions of each unit.	7 Marks
	b)	Design a PST for a city with a population of 1200,000 when they are supplied with 100 lpcd. State all the assumptions made during the design process.	7 Marks
		(OR)	
6	a)	With help of a sketch, explain the working of backwash system in a rapid sand filter. What are the advantages of backwash in RSF?	7 Marks
	b)	What do you mean by disinfection? Explain two methods of disinfection for water treatment.	7 Marks

UNIT-IV

7	a)	Differentiate between temporary and permanent hardness. Explain two methods used in industry to remove permanent hardness.	7 Marks
	b)	With help of sketches, explain any two methods of aeration.	7 Marks
		(OR)	
8	a)	Explaining the implications of fluoride in drinking water, discuss any two methods adopted for defluridation.	7 Marks
	b)	Write a detailed note on desalination techniques and the challenges in recommending those methods.	7 Marks

UNIT-V

9 a) Write a detailed note on detection and prevention of leakage in buildings. 7 Marks

b) Sketch connection from water main to building and indicate the parts and their functions. 7 Marks

(OR)

10 Write notes on:

i) Water supply fittings 7 Marks

ii) Layout of water supply in single storey building 7 Marks

CODE No.:14BT50104 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

SOIL MECHANICS

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the classification of Coarse grained Soils.	6 Marks
	b)	Obtain the relationship between for the water content, void ratio, specific gravity and degree of saturation.	8 Marks
		(OR)	
2		A sample of clay taken from a natural stratum was found to be partially saturated and when tested in the laboratory gave the following results. Specific gravity of soil particles is 2.6, wet weight of sample is 250g, dry weight of sample is 210g and volume of sample is 150cm^3. Compute the degree of saturation, water content, porosity and void ratio using phase diagram.	14 Marks

UNIT-II

3	a)	Define the permeability of soil and what are the factors affecting the permeability.	7 Marks
	b)	Calculate the coefficient of permeability of a soil sample 60mm in height and 5000mm^2 in cross sectional area, if a quantity of water equal to 430ml passed down in 10 minutes under an effective constant head of 400mm. On oven drying, the test specimen weighed 4.98N. Taking G = 2.65, calculate the seepage velocity of water during the test.	7 Marks
		(OR)	
4	a)	Explain effective stress, total stress and neutral stress. What is capillary effect on effective stress of soil?	6 Marks
	b)	A sand deposit of 9m thick overlies a bed of soft clay. The water table is 3m below the ground level. If the sand above the ground water table has a degree of saturation of 60%, plot the diagram showing the variation of the total stress, pore water pressure and the effective stress. Take G = 2.70, void ratio as 0.7.	8 Marks

UNIT-III

5	a)	Describe briefly about pressure bulb.	4 Marks
	b)	The four legs of a transmission tower form in plan a square of side 4m and together carry a total load of 200kN. Compute the increase in vertical stress at a depth of 3m vertically below a Leg. Use Bousinesq's theory.	10 Marks
		(OR)	
6	a)	Describe the factors affecting compaction of soil.	6 Marks
	b)	The soil in a borrow pit has a void ratio of 0.8. A fill in-place volume of 2000m^3 is to be constructed with an in-place dry density of 18.8kN/m^3. If the owner of borrow area is to be compensated at Rs.3.00/- per m^3 of excavation. Determine the cost of compensation.	8 Marks

UNIT-IV

7 a) State the assumptions made in one dimensional consolidation theory. 5 Marks

b) Explain Logarithmic time fitting method to determine coefficient of consolidation. 9 Marks

(OR)

8 An undisturbed sample was collected from a clay stratum of 2m thick and tested in laboratory. The coefficient of consolidation was found to be $2 \times 10^{-4} cm^2/s$ for $1.2 kg/cm^2$. If a structure is built on the clay stratum with a $12 t/m^2$ pressure, how much time will it take to attain half the consolidation settlement? Assume double drainage. 14 Marks

UNIT-V

9 a) Explain the basic differences between a box shear test and a triaxial shear test. 6 Marks

b) A vane 10.8cm long, 7.2cm in diameter was pressed into a soft clay at the bottom of bore hole, torque was applied and the vane at the failure was 45Nm. Find the shear strength of clay on a horizontal plane. 8 Marks

(OR)

10 The following are the results were obtained during consolidated undrained shear strength test. Determine effective shear strength parameters. 14 Marks

Sample No.	Cell Pressure (kN/m^2)	Deviator stress (kN/m^2)	Pore Pressure (kN/m^2)
1	100	150	50
2	200	190	75
3	300	240	135

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

ENGINEERING HYDROLOGY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Write short notes on weather and seasons in India. 7 Marks

b) In a certain river basin there are six rain-gauge stations the normal annual rainfall depths at the stations being 42.4, 53.6, 67.8, 78.5, 82.7 and 95.5cm respectively. Find the optimum number of rain gauge stations to be established in the basin if it is desired to limit the error in the mean value of rainfall over the catchment to 10% and indicate how you distribute them. 7 Marks

(OR)

2 a) Explain three methods of determining the mean areal depths of precipitation over a basin covered by several rain-gauge stations. Indicate the most accurate method of determination giving the reasons. 7 Marks

b) Explain working of a tipping bucket rain gauge with sketch. 7 Marks

UNIT-II

3 a) Write short notes on infiltration indices. 7 Marks

b) A seven hour storm produced the rainfall intensities 4, 9, 20, 18, 13, 11, 12, 2, 8, 16, 17, 13, 6 and 1mm/h at half an hour intervals over a basin of area 1830km^2. If the corresponding observed runoff is 36.6 million m^3. Estimate the φ-index for the storm. 7 Marks

(OR)

4 a) Discuss various infiltration equations. Explain how the constants f_c, f_0 and k in the Horton's equation can be obtained from the experimental data. 7 Marks

b) An infiltration test conducted on a double ring infiltrometer with an inner ring of diameter 30cm yielded the following data. 7 Marks

Time(min)	0	5	10	30	60	120	180	240	300	360
Cumulative volume of water added in cm^3	0	46	90	246	435	662	842	1000	1154	1300

Determine the infiltration capacity rates for the time intervals in the test and plot the variation of infiltration capacity rate with time.

UNIT-III

5 a) Explain mass curve of rainfall. 7 Marks

b) What are the factors that affect runoff? 7 Marks

(OR)

6 a) Explain moving boat method. 7 Marks

b) How do you measure velocity by floats? 7 Marks

UNIT-IV

7 a) What is a hydrograph? Explain the various components of hydrograph. 7 Marks

b) What are the assumptions underlying the unit hydrograph theory? What are the uses of unit hydrograph? 7 Marks

(OR)

8 a) Explain the following methods of design flood estimation: 7 Marks

i) Envelope curves.

ii) Rational method.

b) Given below are the ordinates of a 4h unit hydrograph of a basin in m^3/s at one hour intervals. 7 Marks

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?

UNIT-V

9 a) Describe different forms of land erosion by water. 7 Marks

b) List different methods available for reservoir sediment control. 7 Marks

(OR)

10 a) Explain the area-increment method of determining the sediment distribution in a reservoir. 7 Marks

b) Explain a procedure to estimate the time taken for a reservoir to lose **x%** of its initial volume. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

CONTROL SYSTEMS

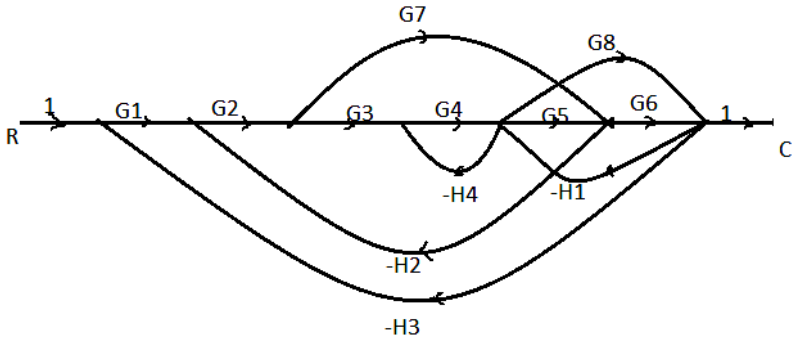
[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

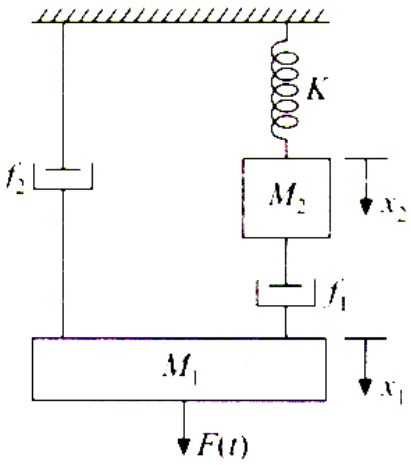
1 a) Find the transfer function of the signal flow graph shown in figure by using Mason's gain formula. 7 Marks



b) Explain the construction and working of Synchro. 7 Marks

(OR)

2 a) Derive the differential equations governing the behaviour of the mechanical system shown. Also draw the analogous electrical circuit based on Force-Voltage analogy. 7 Marks



b) Compare open loop and closed loop system and give an example each. 7 Marks

UNIT-II

3 a) The open loop transfer function of a unity feedback system is given by $G(s) = \frac{K}{s(Ts+1)}$, where K and T are positive constants. By what factor should the amplifier gain K be reduced so that the peak overshoot of unit-step response of the system is reduced from 60% to 30%. 7 Marks

b) Discuss about different static error constants and its significance. 7 Marks

(OR)

4 a) A unity feedback system having an open loop transfer function 7 Marks

$G(s) = \dfrac{K(s+2)(s+3)}{s^2(s^2+8s+15)}$.

Determine:

i) Type of system.

ii) Error constants.

iii) Steady state error for unit-step, unit- ramp and unit- parabolic inputs.

b) Write a short note on effect of Proportional and Integral controller on time domain specifications of second order system. 7 Marks

UNIT-III

5 a) Determine the range of values of K for stability of a unity feedback system whose open loop transfer function is $G(s) = \dfrac{K}{s(s+1)(s+4)}$. 7 Marks

b) Discuss the applications of R-H criterion. 7 Marks

(OR)

6 Draw the complete root locus of the system with $G(s)H(s) = \dfrac{K(s+0.5)(s+2)}{s(s+1)(s-1)}$, determine the range of K for which system is stable. 14 Marks

UNIT-IV

7 a) The open loop transfer function of a unity feedback control system is $G(S) = \dfrac{50}{S(S+5)}$. Draw the Nyquist plot and comment on the stability of the closed loop system. 8 Marks

b) A second order system has overshoot of 50% and period of oscillation 0.2 sec. in step response. Determine resonant peak, resonant frequency and bandwidth. 6 Marks

(OR)

8 a) Derive expressions for resonant peak magnitude and resonant frequency. 8 Marks

b) Derive the transfer functions for Lead and Lag compensation networks. 6 Marks

UNIT-V

9 a) Explain the State space representation of n^{th} order differential equation. 6 Marks

b) Obtain the state transition matrix and determine the time response for the system 8 Marks

$\dot{X} = AX$.

Where $A = \begin{bmatrix} 0 & 1 \\ -2 & 2 \end{bmatrix}$ and initial conditions are $X_1(0) = 1$, $X_2(0) = 1$.

(OR)

10 a) State and explain controllability and observability. 6 Marks

b) The transfer function of a control system is given by $\dfrac{Y(s)}{U(s)} = \dfrac{S+2}{S^3+9S^2+26S+24}$. 8 Marks

Check for controllability and observability.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

COMPUTER ORGANIZATION AND ARCHITECTURE

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Develop a flow chart for binary division algorithm.	7 Marks
	b)	Interpret Booth's multiplication algorithm to an example **-11 * 15** using 8 bit numbers.	7 Marks
		(OR)	
2	a)	Write about register transfers and Register Transfer language with an example.	7 Marks
	b)	Compute square root for $\mathbf{172_{10}}$ using binary square root algorithm.	7 Marks

UNIT-II

3	a)	Compare and contrast RISC and CISC.	7 Marks
	b)	Discuss about the design issues of instructions and its elements in detail.	7 Marks
		(OR)	
4	a)	Discuss in detail about computer instructions.	7 Marks
	b)	Suppose a machine encodes instructions in 32 bits according to the following format. Also, suppose the encoding must accommodate 164 opcodes and 50 registers. OPCODE, Source Registers, Destination Registers, Immediate field. What is the greatest number of bits that are required to represent the immediate field? If the Immediate field encodes a 2's complement integer, what range of values can be represented with these bits?	7 Marks

UNIT-III

5	a)	Discuss about Wilke's Micro programmed model with flow chart.	7 Marks
	b)	Write about Hardwired control unit in detail.	7 Marks
		(OR)	
6	a)	Define basic terms Hit, Miss and Miss penalty and explain how to compute performance of cache memory.	7 Marks
	b)	A cache has 4 sets and what would be the address of cache line to transfer 12 block main memory if the cache using Direct Mapping Management technique.	7 Marks

UNIT-IV

7		With the help of block diagram explain 8085 architecture.	14 Marks
		(OR)	
8	a)	Draw the timing diagram for the execution of instruction MVI A, 32H.	7 Marks
	b)	List the sequence of events that occur when 8085 MPU reads from memory.	7 Marks

UNIT-V

9	a)	Write an assembly language program for an 8085 processor for adding two binary numbers.	7 Marks
	b)	With the help of a neat sketch, explain memory mapped I/O interfacing.	7 Marks
		(OR)	
10		Explain 8085 interrupt process in detail.	14 Marks

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CODE No.:14BT50203 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

SYNCHRONOUS MACHINES

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Discriminate salient pole and non-salient pole type alternators. 7 Marks

b) Find the no-load phase and line voltage of a star-connected 3-phase, 6-pole alternator which runs at 1200 r.p.m, having flux per pole of 0.1 Webers sinusoidally distributed. Its stator has 54 slots having double layer winding. Each coil has 8 turns and the coil is chorded by **1** slot. 7 Marks

(OR)

2 Explain the effect of armature reaction on the terminal voltage of an alternator at (i) UPF (ii) ZPF lagging (iii) ZPF leading loads. Draw the relevant phasor diagrams. 14 Marks

UNIT-II

3 a) Compare synchronous impedance and ampere-turns methods of predetermining voltage regulation of alternator. 7 Marks

b) Develop the phasor diagram of a salient pole alternator for lagging and leading power factor using Blondel's two reaction theory. 7 Marks

(OR)

4 The following test results are obtained on a 6,600V alternator: 14 Marks

Open-circuit voltage (V) :	3,100	4,900	6,600	7,500	8,300
Field current (A) :	16	25	37.5	50	70

A field current of 20A is found necessary to circulate full-load current on short-circuit of the armature. Calculate by:

i) The ampere-turn method

ii) The synchronous impedance method the full-load regulation at 0.8 p.f. (lag). Neglect resistance and leakage reactance. State the drawbacks of each of these methods.

UNIT-III

5 a) Derive an expression for the synchronizing power between the two alternators connected in parallel. 7 Marks

b) Two alternators A and B operate in parallel and supply a load of 10MW at 0.8 p.f. lagging. (i) By adjusting steam supply of A, its power output is adjusted to 6,000kW and by changing its excitation, its p.f. is adjusted to 0.92 lag. Find the p.f. of alternator B. (ii) If steam supply of both machines is left unchanged, but excitation of B is reduced so that its p.f. becomes 0.92 lead, find new p.f. of A. 7 Marks

(OR)

6 A 6,000V, 1,000kVA, 3-φ alternator is delivering full-load at 0.8 p.f. lagging. Its reactance is 20% and resistance negligible. By changing the excitation, the e.m.f. is increased by 25% at this load. Calculate the new current and the power factor. The machine is connected to infinite bus-bars. 14 Marks

UNIT-IV

7 Draw the phasor diagram of a synchronous motor. Explain the effect of: 14 Marks

i) Change of excitation if load is constant.

ii) Change of load if excitation is constant.

(OR)

8 a) Explain the hunting of a synchronous machine. What is the purpose of damper windings in a synchronous machine? 7 Marks

b) What is meant by power circle? Explain the locus of armature current variation with constant mechanical power developed. 7 Marks

UNIT-V

9 a) Describe the construction, working and uses of reluctance motor. 7 Marks

b) Find the mechanical power output of 185W, 4 pole, 110V, 50Hz single-phase induction motor, whose constants are given below at a slip of 0.05. R_1 = 1.86Ω X_1= 2.56Ω, X_φ = 53.5Ω , R_2 = 3.56 Ω , X_2 = 2.56Ω, Core loss = 3.5W, Friction and windage loss = 13.5W. 7 Marks

(OR)

10 a) Explain the principle of operation of universal motor. 7 Marks

b) Explain why DC servomotors are preferred over AC servomotors for high power applications. 7 Marks

CODE No.:14BT50204 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

TRANSMISSION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

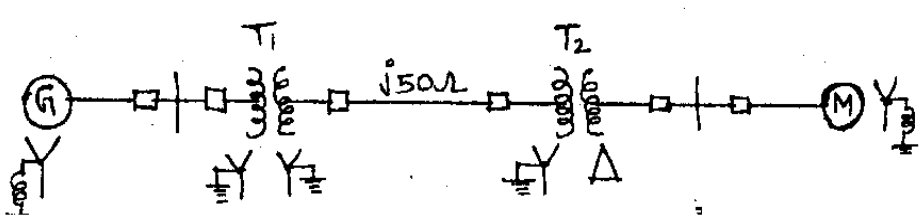
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Draw the reactance diagram for the power system shown in figure. Neglect resistance and use a base of 100MVA, 220kV in 50Ω line. The ratings of the generator, motor and transformer are given below. 14 Marks

Generator : 40MVA, 25kV, X'' = 20%
Synchronous motor : 50MVA, 11kV, X'' = 30%
Y-Y Transformer : 40MVA, 33/220kV, X = 15%
Y-Δ Transformer : 30MVA, 11/220kV, X = 15%



(OR)

2 a) Explain the necessity of transposition in transmission lines. 7 Marks

b) A single phase transmission line has two parallel conductors 3m apart each conductor being 1cm. Calculate the loop inductance per km length of the material of the conductor is i) copper ii) steel with $\mu_r = 100$. 7 Marks

UNIT-II

3 a) Discuss the nominal T model of a medium transmission line with appropriate circuit diagram and phasor diagram and hence obtain the expressions for regulation and ABCD constants of the same. 8 Marks

b) A 3-phase, 50Hz transmission line is 250km long. The load is 125MW operating at 220kV upf. Evaluate the incident and reflected voltages at receiving end. R = 0.172Ω/km, L=2.1mH/km and C=0.01μF/km. 6 Marks

(OR)

4 a) Define and explain the importance of surge impedance and surge impedance loading. 6 Marks

b) A 3-phase short transmission line delivers 3MW at a p.f. of 0.8 lagging to a load. If the sending end voltage is 33kV, determine (i) receiving end voltage (ii) line current (iii) transmission efficiency (iv) regulation. The resistance and reactance of each conductor are 5 ohms and 8 ohms respectively. 8 Marks

UNIT-III

5 a) Show that a traveling wave moves with a velocity of light on the overhead line. 7 Marks

b) A 3-Φ transmission line has conductors 1.5cm in diameter spaced 1m apart in equilateral formation. The resistance and leakage are negligible. Find the natural impedance of the line. 7 Marks

(OR)

6	a)	Write short notes on Beweley's lattice diagram.	6 Marks
	b)	A surge of 200kV traveling on a line of natural impedance 500 ohms arrives at a junction with two lines of impedances 700 ohms and 300 ohms respectively. Find the surge voltages and currents transmitted into each branch line. Also find the reflected surge voltage and current.	8 Marks

UNIT-IV

7	a)	Discuss the phenomenon of corona and corona loss and indicate the circumstances under which they are likely to occur.	7 Marks
	b)	Calculate the disruptive critical voltage for a 3-Φ overhead line which has three smooth round conductors of 12.7mm diameter arranged in a 3m delta. The barometric pressure is 750mm of mercury and the air temperature is -1°C. The breakdown strength of air is 21KV RMS/cm.	7 Marks

(OR)

8	a)	What are the types of insulators?	4 Marks
	b)	A string of 5 suspension insulators is connected across 100KV line. Calculate the distribution of voltage on the insulator discs if the capacitance of each disc to earth is 0.1 of the capacitance of the insulator. Calculate also the string efficiency.	10 Marks

UNIT-V

9	a)	What is stringing chart?	4 Marks
	b)	An overhead transmission line has a span of 240m between level supports. Calculate the maximum sag if the conductor weighs 727kg-f/km and has a breaking strength of 6880kg-f. Allow a factor of safety of 2. Neglect wind and ice loading.	10 Marks

(OR)

10		Determine the expression for capacitance of a 3-core belted cable.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

DYNAMICS OF MACHINERY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		The diameter of cylinder of a vertical single cylinder single acting diesel engine is 300mm. the length of crank and connecting rods 250mm and 1.125m respectively. Reciprocating parts are having a mass of 140kg and engine is running at 270 r.p.m. The ratio of compression is 14 and pressure remains constant during injection of oil for 1/10th of the stroke. The index of law for compression and expansion is 1.35(i.e. pv1.35= constant for compression and expansion). Find the torque on the crankshaft when the crank makes an angle of 45^0 with the inner dead centre during expansion stroke. Suction may be assumed at a pressure of 100KN/m^2	14 Marks
		(OR)	
2	a)	Explain the procedure to determine the velocity and acceleration of a four-bar mechanism by Klein's construction.	7 Marks
	b)	The lengths of crank and connecting rod of a horizontal reciprocating engine are 200mm and 800mm respectively. The crank is rotating at 480 r.p.m. Using Klein's constructions find the acceleration of the piston.	7 Marks

UNIT-II

3	a)	What is the effect of gyroscopic couple on rolling of ship? Why?	7 Marks
	b)	The rotor of a turbine yacht rotates at 1200 r.p.m clockwise when viewed from stern. The rotor has a mass of 750kg and radius of gyration of 250mm. Find the maximum gyroscopic couple transmitted to the hull when yacht pitches with a maximum angular velocity of 1 rad/s.	7 Marks
		(OR)	
4	a)	Derive expression for coefficient of steadiness.	7 Marks
	b)	Derive expression for energy stored in flywheel.	7 Marks

UNIT-III

5		Explain the theory of following brakes: i) Block brake. ii) Band brake. iii) Band and block brake.	14 Marks
		(OR)	
6		The external and internal radii of a friction clutch of disc type are 90 mm and 50 mm respectively. Both sides of the friction clutch are effective and coefficient of friction is equal to 0.25. The friction clutch is used to rotate a machine from a shaft which is rotating at a constant speed of 240 r.p.m. The moment of inertia of the rotating parts of the machine is 5.5 kg-m^2. The intensity of pressure is not to exceed 0.8×10^5 N/m^2. Assuming uniform wear, determine the time required for the machine to attain the full speed when the clutch is suddenly applied. Also determine the energy lost in slipping of the clutch.	14 Marks

UNIT-IV

7 a) A mass is attached to a shaft which is rotating at an angular speed of ω rad/s. Describe the procedure of balancing this mass by i) A single mass only ii) Two masses in different planes. 7 Marks

b) Three masses of 8kg, 12kg and 15kg attached at radial distances of 80mm, 100mm and 60mm respectively to a disc on a shaft are in complete balance. Determine the angular positions of the masses 12kg and 15kg relative to 8kg mass. 7 Marks

(OR)

8 a) Describe the function of a simple watt governor. What is its limitation? 7 Marks

b) Each ball of a Porter governor has a mass of 6kg and the mass of the sleeve is 40kg. The upper arms are 300mm long and are pivoted on the axis of rotation whereas the lower arms are 250mm long and are attached to the sleeve at a distance of 40mm from the axis. Determine the equilibrium speed of the governor for a radius of rotation of 150mm for 1**%** change in speed. Also find the effort and the power for the same speed change. 7 Marks

UNIT-V

9 a) Explain the different cases of damped vibrations with sketches. 7 Marks

b) A cantilever shaft 50mm diameter and 300mm long has a disc of mass 100kg at its free end. The Young's modulus for the shaft material is 200GN/m^2. Determine the frequency of longitudinal and transverse vibration of the shaft. 7 Marks

(OR)

10 a) Derive an expression for the natural frequency of the free longitudinal vibration by Rayleigh's method. 7 Marks

b) In a single degree of damped vibration system a suspended mass of 8kg makes 30 oscillations in 18 seconds. The amplitude decreases in 18 seconds. The amplitude decreases to 0.25 of the initial value after 5 oscillations. Determine i) the spring stiffness ii) logarithmic decrement. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

INDUSTRIAL ENGINEERING AND MANAGEMENT

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain the importance of direction and control in management functions. 14 Marks

(OR)

2 Explain the Henry Fayol's principles of scientific management. 14 Marks

UNIT-II

3 A blast furnace in a steel plant receives it's burden from different facilities of the plant. How do you plan the maintenance of the blast furnace with its supporting conveyors, cranes etc.? 14 Marks

(OR)

4 Define reliability. Explain the meaning of series and parallel systems with two engineering examples for each. 14 Marks

UNIT-III

5 Define productivity and explain the role of work study in reducing the work content. 14 Marks

(OR)

6 What is performance rating? Explain its significance. Briefly explain the rating methods. 14 Marks

UNIT-IV

7 a) List out assumptions in EOQ. 7 Marks

b) Derive an equation for EOQ. 7 Marks

(OR)

8 Determine EOQ and total cost for the following 14 Marks

i) Annual demand = 96000 units ii) Ordering cost = 75/order

iii) Carrying Cost = 10% iv) Purchase cost = 30/unit.

UNIT-V

9 Define quality control and process control with their objectives and also with suitable examples. 14 Marks

(OR)

10 What is control chart? Give the classification and explain any two types of control charts. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

THERMAL ENGINEERING - II

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the working of Cochran boiler with a neat sketch. List out its special features.	7 Marks
	b)	What are the essential features of a good boiler?	7 Marks
		(OR)	
2	a)	What is the use of preheater in high pressure boiler?	7 Marks
	b)	Explain the working of a economiser with a neat sketch.	7 Marks

UNIT-II

3	a)	Draw T-S and H-S diagrams of reheat Rankine cycle with the help of circuit diagram and derive its efficiency.	7 Marks
	b)	Calculate the height of chimney required to produce a draught equivalent to 1.7cm of water if the flue gas temperature is 270^0 C and ambient temperature is 22^0 C and minimum amount of air per kg of fuel is 17kg.	7 Marks
		(OR)	
4	a)	What is boiler draught and how it is produced by a chimney?	7 Marks
	b)	In a Rankine cycle, the steam at inlet to a turbine is dry saturated at a pressure of 35 bar and the exhaust pressure is 0.2 bar. Calculate pump work, turbine work, Rankine efficiency and condenser heat flow. Assume flow rate of steam is 9.5kg/s.	7 Marks

UNIT-III

5		Steam at a pressure of 10 bar and 0.9 dry discharges through nozzle having throat area of 450mm^2. If the back pressure is 1 bar. Find (i) final velocity of the steam (ii) cross-sectional area of the nozzle at exit for maximum discharge.	14 Marks
		(OR)	
6	a)	Explain the functions of nozzles used with steam turbines.	7 Marks
	b)	Steam at a pressure of 10 bar and 210^0 C is supplied to a convergent divergent nozzle with a throat area of 1,500m^2. The exit is below critical pressure. Find the coefficient of discharge, if the flow is 7,200kg of steam per hour.	7 Marks

UNIT-IV

7	a)	Distinguish between impulse and reaction turbine.	7 Marks
	b)	Steam leaves the ring of nozzles of an impulse turbine at 450m/s. The velocity is compounded in two rings of moving blade separated by a ring of fixed blades. The moving blades are symmetrical and their tip angles are 30^0, the blade velocity is 75m/s. The friction for each ring of fixed and moving blades is 0.9. Determine the power developed and blade efficiency if the steam flow rate is 5kg/s.	7 Marks
		(OR)	

8 a) Explain the principle of working of an impulse turbine and also draw the velocity triangles. 7 Marks

b) A reaction turbine has a mean diameter of blade rings of 100cm. The motor rotates at 200 r.p.m. The blade speed ratio is 0.4. The blades are equiangular. The steam enters at 20^0 to the plane of rotation of the blades. Friction coefficient for the blades is 0.9. Find the work output, if the mass flow rate of steam is 22kg/s. 7 Marks

UNIT-V

9 a) Explain the working of reheat gas turbine plant with the help of a T-S diagram. 7 Marks

b) In a gas turbine the compressor taken in air at a temperature of 27^0 C and compresses it to five times the initial pressure with an isentropic efficiency of 85%. The air is then passed through a regenerator heated by the turbine exhaust before reaching the combustion chamber. The effectiveness of the regenerator is 80%. The maximum temperature after constant pressure combustion is 677^0 C and the efficiency of the turbine is 80%. Neglecting all losses except mentioned and assuming the working fluid throughout the cycle to have the characteristics of air, 7 Marks

i) Sketch the cycle on the T-S diagram.

ii) Calculate the efficiency of the cycle.

(OR)

10 a) Explain briefly the working principle of a rocket with neat sketch. 7 Marks

b) With the aid of the schematic diagram and thermodynamic cycle, explain the working of a turbo jet engine. 7 Marks

CODE No.:14BT50304 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

MACHINE TOOLS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Show schematically Merchant's force circle in orthogonal cutting. Derive the equations for shear and friction forces in terms of material properties and cutting process parameters.	10 Marks
	b)	What are chip breakers?	4 Marks
		(OR)	
2	a)	With a neat sketch, explain the nomenclature of a single point cutting tool and its significance.	10 Marks
	b)	Mention the various types of chips and their significance.	4 Marks

UNIT-II

3	a)	Discuss the effects of tool geometry, feed, depth of cut and cutting speed on tool wear.	7 Marks
	b)	Describe briefly about taper turning methods.	7 Marks
		(OR)	
4	a)	The following data were recorded while turning a work piece with a lathe: cutting speed = 30m/min; feed rate = 0.4mm/rev; depth of cut = 3.0mm; tool life=105minutes. The following relation for tool life is given for this operation: $$VT^{0.12}f^{0.7}d^{0.3} = C$$ If the cutting speed is increased by 25%, what will be the effect on tool life?	8 Marks
	b)	Distinguish between turret and capstan lathes with neat sketches.	6 Marks

UNIT-III

5	a)	Sketch and explain various parts of radial drilling machine.	7 Marks
	b)	Sketch the block diagram of planer and explain the main parts in it.	7 Marks
		(OR)	
6	a)	Explain hydraulic quick return mechanism of a shaper with suitable diagram.	7 Marks
	b)	Explain the parts of deep hole drilling machine with a diagram.	7 Marks

UNIT-IV

7	a)	Explain a surface grinder with a diagram.	8 Marks
	b)	Write notes on: i) Precision grinding ii) Polishing iii) Buffing	6 Marks
		(OR)	
8	a)	Explain 'Dressing' and 'Truing' of a grinding wheel with diagrams.	7 Marks
	b)	Write short notes on Lapping and Honing.	7 Marks

UNIT-V

9	a)	Explain various milling operations with a neat sketch.	6 Marks
	b)	Explain the construction details of a box type jig with a suitable sketch.	8 Marks
		(OR)	
10	a)	Sketch and explain universal milling machine.	7 Marks
	b)	Explain the design principles of jigs and fixtures.	7 Marks

CODE No.:14BT50305 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

DESIGN OF MACHINE ELEMENTS-I

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

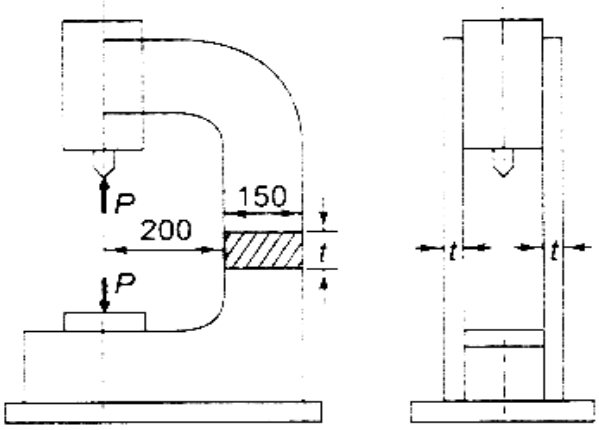
1 a) Describe the general considerations in design. 7 Marks

b) Explain the mechanical properties of engineering materials. 7 Marks

(OR)

2 a) Explain the basic modes of failure of mechanical components with examples. 6 Marks

b) The frame of a hydraulic press consisting of two identical steel plates is shown in figure. The maximum force P acting on the frame is 20kN. The plates are made of steel 45C8 with tensile yield strength of 380N/mm^2. The factor of safety is 2.5. Determine the plate thickness. 8 Marks



UNIT-II

3 a) Describe the notch sensitivity factor. 4 Marks

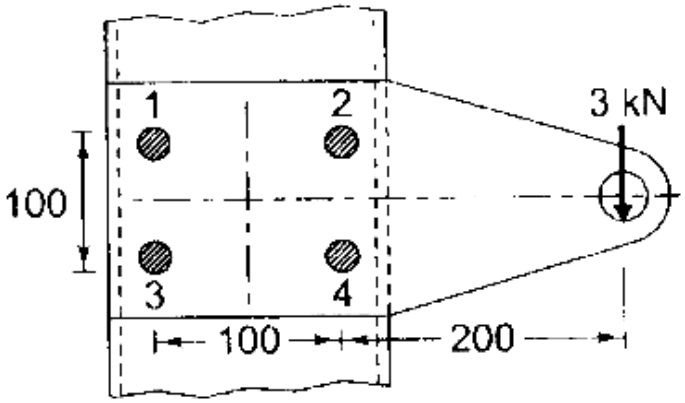
b) A solid circular shaft made of AISI 8635 steel is subjected to an alternating torsional moment which varies from –200N-m to 450N-m. Using modified Goodman diagram, calculate the shaft diameter for infinite life. Take factor of safety = 2, surface finish factor = 0.88, size factor = 0.85, reliability factor = 0.897 .fatigue stress concentration factor = 1.6. 10 Marks

(OR)

4 A transmission shaft carries a pulley between two bearings. The bending moment at the pulley varies from 100 N-m to 400 N-m, as the torsional moment in the shaft varies from 50 N-m to 110 N-m. The shaft is made of steel (S_{ut} = 540N/mm^2, S_{yt}=400N/mm^2). The corrected endurance limit of the shaft is 200N/mm^2 .Determine the diameter of the shaft using a factor of safety of 2. 14 Marks

UNIT-III

5 A bracket is fixed to the steel column by means of four identical bolts (figure), two at A and two at B. The maximum load that comes on the bracket is 3kN acting vertically at a distance of 200mm from the face of the column. The bolts are made of plain carbon steel 30C8 and the factor of safety is 5. Determine the major diameter of the bolts on the basis of maximum principal stress. 14 Marks



(OR)

6 a) Discuss various ways in which a riveted joint may fail. 6 Marks

b) Two plates of 10mm thick are joined by means of a single riveted, double strap butt joint. The rivet diameter is 20mm and pitch of the rivets is 60mm. The permissible stresses are: σ_t =80MPa, σ_c = 120MPa, τ = 60MPa. Calculate the efficiency of the joint. 8 Marks

UNIT-IV

7 a) What is the effect of cutting keyway in the shaft? 4 Marks

b) A shaft and key are made of same material and key width is **(1/3)rd** of the shaft diameter. (i) Considering shear only determine the minimum length of the key. (ii) Determine thickness of the key to make the key equally strong in shear and crushing taking the shear strength of the key material as 40% of crushing strength. 10 Marks

(OR)

8 Design a bushed pin type of flexible coupling for connecting the motor and centrifugal pump shafts for the following duty:
Power to be transmitted = 15kW, speed in r.p.m = 1000, diameter of motor and pump shafts = 50mm and 40mm respectively, bearing pressure on rubber bush = 0.3 N/mm^2 and allowable shear stress in pins = 20 N/mm^2. 14 Marks

UNIT-V

9 a) Distinguish between cotter joint and knuckle joint. 4 Marks

b) Discuss the design procedure of spigot and socket cotter joint. 10 Marks

(OR)

10 Design a knuckle joint for a tie rod of a circular section to sustain a maximum pull of 70kN. The ultimate strength of the material of the rod against tearing is 420MPa. The ultimate tensile and shearing strength of the pin material are 510MPa and 396MPa respectively. Determine the tie rod section and pin section. Take factor of safety = 6. 14 Marks

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CODE No.:14BT50306 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

AUTOMOBILE ENGINEERING

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Illustrate the turbo charging. List out advantages and disadvantages.	7 Marks
	b)	Explain construction and operational aspects of common rail fuel injection system. What are the merits of the system?	7 Marks
		(OR)	
2	a)	Outline four wheel drive vehicle and discuss its advantages and disadvantages.	7 Marks
	b)	Explain the working of Zenith carburetor with a neat sketch.	7 Marks

UNIT-II

3	a)	Outline the forced circulation cooling system and explain the working principle in detail. List out applications.	7 Marks
	b)	Why cooling is necessary for IC Engine? Why overheating and over cooling of IC is harmful?	7 Marks
		(OR)	
4	a)	Sketch and explain the electronic ignition system with contact breakers. List out advantages.	7 Marks
	b)	Discuss in detail the construction of an ignition coil.	7 Marks

UNIT-III

5	a)	Give a brief account of emissions from CI engines.	7 Marks
	b)	What is EGR and explain how EGR can reduce NO**x** emissions from the automobile?	7 Marks
		(OR)	
6	a)	Distinguish between electronic catalytic convertor and conventional catalytic convertor.	7 Marks
	b)	What are bio-diesels and how can use of bio-diesel influence emissions from automobile?	7 Marks

UNIT-IV

7	a)	Explain with a simple schematic diagram, construction and working of a single plate clutch system.	7 Marks
	b)	Draw Ackerman steering mechanism and explain its working with limitations if any.	7 Marks
		(OR)	
8	a)	Draw and explain with schematic diagram, working of a sliding mesh gear box.	7 Marks
	b)	What are the functional requirements of steering system?	7 Marks

UNIT-V

9	a)	Explain briefly how hydraulic shock absorbers act to reduce car tossing and rolling.	7 Marks
	b)	With the help of a simple sketch, explain the functions of main parts of master cylinder.	7 Marks
		(OR)	
10	a)	How does a tension type spring shackle differ from a compression spring?	7 Marks
	b)	What are the essential differences between mechanical brakes and hydraulic brakes?	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

ANTENNAS AND PROPAGATION

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Briefly explain the following terms related to antenna: i) Antenna apertures ii) Radiation resistance iii) Patterns iv) Beam width.	14 Marks
		(OR)	
2	a)	Explain about the current distributions of half wave dipole.	6 Marks
	b)	The maximum radiation intensity of 96% efficiency antenna is 180mW/unit solid angle. Find the directivity and gain (dB), when the i) input power is 125.66 mW. ii) radiated power is 125.66mW.	8 Marks

UNIT-II

3	a)	Explain the field pattern of two element array of broadside and end fire case.	6 Marks
	b)	A linear Broad-side array consists of four equal in-phase point sources with **λ/3** spacing. Calculate and plot the field pattern. Also find the directivity and beam width.	8 Marks
		(OR)	
4	a)	Find the radiation pattern of four isotropic elements fed in phase, spaced **λ/2** apart by using pattern multiplication.	8 Marks
	b)	Compare broad-side and end-fire arrays.	6 Marks

UNIT-III

5	a)	What is Yagi-Uda antenna? Explain its construction and properties with special reference to the directivity, bandwidth and impedance.	8 Marks
	b)	Explain folded diploes and their characteristics?	6 Marks
		(OR)	
6	a)	Discuss the design considerations for monofilar helical antenna in axial mode.	7 Marks
	b)	With neat diagram, explain the geometry of parabolic reflector.	7 Marks

UNIT-IV

7		Describe how gain of an antenna under test can be measured using absolute gain method.	14 Marks
		(OR)	
8		Discuss about different techniques used for measuring the pattern.	14 Marks

UNIT-V

9	a)	What is an 'Atmospheric Duct'? When and why does it occur?	7 Marks
	b)	Explain the structure of atmosphere. Compute the effective dielectric constant of the E layer with $N=5 \times 10^5$ electrons/sec, if the frequency of the wave is 25MHz.	7 Marks
		(OR)	
10	a)	Write short notes on: i) Duct Propagation. ii) Space wave Propagation.	7 Marks
	b)	Derive an expression for effective dielectric constant and critical frequency of an ionospheric layer.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the quantization of analog signals.	6 Marks
	b)	Describe the elements of Pulse Code Modulation with neat block diagram.	8 Marks
		(OR)	
2	a)	Draw the block diagram of a DPCM encoder and decoder and explain its operations.	8 Marks
	b)	Discuss the drawbacks of Delta Modulation.	6 Marks

UNIT-II

3	a)	Derive an equation for quantization noise in PCM.	6 Marks
	b)	Consider an audio signal $E_m(t)= 2\cos(1000\pi t)$, i) Find the signal power to quantization noise power ratio when the signal is quantized using 8-bit PCM. ii) How many bits of quantization is need to quantization noise ratio of at least 30 dB?	8 Marks
		(OR)	
4	a)	Obtain an expression for S/N at the output of a DM system.	7 Marks
	b)	Explain the effect of thermal noise in DM.	7 Marks

UNIT-III

5	a)	Explain the different binary PAM signaling formats.	7 Marks
	b)	Draw and explain eye patterns are used for monitoring the performance of base band PAM system	7 Marks
		(OR)	
6	a)	Explain with a neat block diagram of transmitter and receiver of M-ary QAM system.	7 Marks
	b)	What is Matched filter? Derive an expression for Matched filter.	7 Marks

UNIT-IV

7	a)	Show that H(X,Y) = H(X) + H(Y/X) = H(Y) + H(X/Y).	8 Marks
	b)	Define the channel capacity in terms of average signal power and noise power.	6 Marks
		(OR)	
8	a)	Draw the diagram for model of a discrete memory less channel and explain.	6 Marks
	b)	An information source produces sequences of independent symbols having the following probabilities.	8 Marks

A	B	C	D	E	F	G
1/3	1/27	1/3	1/9	1/9	1/27	1/27

Using Shannon-Fano procedure;

i) Construct a binary code.

ii) Determine the efficiency and redundancy.

UNIT-V

9 14 Marks

Consider a (6, 3) generator matrix $G = \begin{bmatrix} 1\,0\,0\,0\,1\,1 \\ 0\,1\,0\,1\,0\,1 \\ 0\,0\,1\,1\,1\,0 \end{bmatrix}$

Find i) All the code vectors of this data.
ii) The parity check matrix for this code.
iii) The minimum weight of this code.

(OR)

10 a) Explain Linear Block Codes and Hamming Codes. 7 Marks

b) Explain the handling of burst errors in communications. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly list out the differences between TTL, ECL and CMOS logic family.	6 Marks
	b)	Design a CMOS transistor circuit that has the functional behavior $f(X) = \overline{A \cdot (B + C)}$.	8 Marks

(OR)

2	a)	Explain how to estimate sinking current for low output and sourcing current for high output of CMOS gate.	8 Marks
	b)	Analyze the fall time of a CMOS inverter output with R_L=100Ω, V_L=2.5V and C_L=10pF. Assume V_L as stable state voltage.	6 Marks

UNIT-II

3		Write VHDL program for 8-bit comparator circuit. Using this entity write VHDL program for 24-bit comparator. Show the additional logic used for this purpose, use structural style or modeling.	14 Marks

(OR)

4		Design the logic circuit and write a data-flow style VHDL program for the following functions. i) F(A) = $\Sigma_{P, Q, R, S}$ (1, 3, 4, 5, 6, 7, 9, 12, 13, 14) ii) F (X) = $\Sigma_{A, B, C, D}$ (3, 5, 6, 7, 13) + d (1, 2, 4, 12, 15)	14 Marks

UNIT-III

5	a)	Design a nine bit parity generator and checker.	7 Marks
	b)	Write short notes on floating point encoder.	7 Marks

(OR)

6	a)	Design a module to convert excess3 to BCD code and write Verilog code to verify its functionality.	7 Marks
	b)	Design a four bit Carry look ahead adder and mention advantages and disadvantages over Ripple carry adder.	7 Marks

UNIT-IV

7	a)	Design a edge trigger D flip flop.	7 Marks
	b)	Design a 4 bit universal shift register and write a Verilog code using behavioral modeling.	7 Marks

(OR)

8	a)	Write short notes on synchronous design methodology.	7 Marks
	b)	Design a four bit standard counter and write a Verilog program using behavioral modeling.	7 Marks

UNIT-V

9 a) Tabulate the truth table for an 8 x 4 ROM that implements the Boolean functions 7 Marks

$A(x,y,z) = \varepsilon(0, 3, 4, 6)$

$B(x, y, z) = \varepsilon(0, 1, 4, 7)$

$C(x, y, z) = \varepsilon(1, 5)$

$D(x, y, z) = \varepsilon(0, 1, 3, 5, 7)$

b) A DRAM chip uses two-dimensional address multiplexing. It has 13 common address pins, with the row address having one bit more than the column address. What is the capacity of the memory? Explain. 7 Marks

(OR)

10 a) Write a Verilog program for modeling of RAM element having 64-Word, 16-Bit. 7 Marks

b) Show the memory cycle timing waveforms for the write and read operations. Assume a CPU clock of 150MHz and a memory cycle time of 20ns. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about: i) Inverting amplifier ii) Non-inverting amplifier iii) Voltage follower.	7 Marks
	b)	Explain about AC characteristics of an op- amp.	7 Marks
		(OR)	
2	a)	Explain about the pin configuration of IC 741 op-amp.	7 Marks
	b)	Explain about DC characteristics of an op- amp.	7 Marks

UNIT-II

3	a)	Draw the circuit of an AC amplifier using op-amp and explain its operation.	7 Marks
	b)	Using an op-amp, draw the circuit diagram to generate a triangular wave and explain its operation.	7 Marks
		(OR)	
4	a)	Explain how op-amp can be used as a differentiator using necessary expressions.	7 Marks
	b)	With a neat sketch, explain how op-amp can be used as an antilog amplifier.	7 Marks

UNIT-III

5	a)	Design a HPF at a cut-off frequency of 1KHz and a pass band gain of 2.	10 Marks
	b)	Why active filters are preferred compared to passive filters?	4 Marks
		(OR)	
6	a)	Explain about the basic op-amp series regulator and its block diagram.	8 Marks
	b)	Explain about line regulation and load regulation.	6 Marks

UNIT-IV

7	a)	Design a square waveform generator of frequency 100Hz and duty cycle of 75%.	10 Marks
	b)	Define capture range, lock range and pull-in-time.	4 Marks
		(OR)	
8	a)	Give the block diagram of IC 566 VCO and explain its operation.	7 Marks
	b)	Derive the expression of time delay of a monostable multivibrator.	7 Marks

UNIT-V

9	a)	With a neat block diagram, explain the operation of a parallel comparator.	10 Marks
	b)	List out the direct type and integrating type ADCs, which type of A/D converter is faster? Why?	4 Marks
		(OR)	
10		Explain the following: i) Dual slope ADC. ii) Monolithic DAC.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

PULSE AND DIGITAL CIRCUITS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Specify the condition for which low-pass RC circuit act as an integrator. And also draw the input and output waveforms.	6 Marks
	b)	Why does a resistive attenuator need to be compensated? Explain different methods of compensation.	8 Marks
		(OR)	
2	a)	Explain ringing circuit and attenuator.	7 Marks
	b)	Explain the application of an attenuator as CRO probe.	7 Marks

UNIT-II

3	a)	Determine the peak output voltage for a negative series clipper circuit connected to an input sinusoidal signal of peak value 12V. The barrier potential for silicon diode is 0.7V. Draw the circuit diagram and output waveform.	7 Marks
	b)	Explain the response of clamping circuit when a square wave is applied under steady state conditions.	7 Marks
		(OR)	
4	a)	State and prove clamping circuit theorem.	7 Marks
	b)	What is the difference between the output from a clipping circuit and a clamping circuit? Explain with neat sketches.	7 Marks

UNIT-III

5	a)	Give the design procedure for emitter coupled astable multivibrator.	7 Marks
	b)	Design an monostable multivibrator to produce an output with pulse width 120msec for V_{CC} = 10V, h_{FE} = 50, IC (sat) = 100μA.	7 Marks
		(OR)	
6	a)	Design a circuit that converts any periodic waveform into a pulse train waveform with circuit diagram and wave forms.	7 Marks
	b)	Explain the use of a monostable relaxation circuit as a frequency divider with the help of neat diagram and wave forms.	7 Marks

UNIT-IV

7		Write notes on the following:	
		i) Differentiate voltage and current time based generators.	7 Marks
		ii) Monostable blocking oscillators.	7 Marks
		(OR)	
8	a)	Draw transistor Bootstrap time base generator and explain its operation.	7 Marks
	b)	Which type of time base generator is used in electromagnetic and electrostatic deflection systems? Explain.	7 Marks

UNIT-V

9	a)	Explain sampling gates and their applications.	7 Marks
	b)	What are the techniques employed to cancel the pedestal in gate circuits?	7 Marks
		(OR)	
10	a)	Explain RTL circuit.	7 Marks

b) Explain the circuit that gives inverter and buffer outputs using fastest logic family. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

MICROPROCESSORS AND INTERFACING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List out assembler directives of 8086 processor and explain it.	7 Marks
	b)	Explain the maximum mode of operation of 8086 processor.	7 Marks
		(OR)	
2	a)	Interface analog to digital converter to 8086 processor and write a program to read the data on I/P bus.	10 Marks
	b)	Explain the following instructions in 8086 family with example and their effect on flag. (i) CALL (ii) IDIV (iii) DAA (iv) LOOP	4 Marks

UNIT-II

3	a)	Describe the interrupt handling mechanism of 8086.	8 Marks
	b)	Bring out the differences between static and dynamic RAM.	6 Marks
		(OR)	
4	a)	Illustrate the initialization of 8259 and describe the ICWs used to initialization.	8 Marks
	b)	Describe the signal description of 8257 DMA controller.	6 Marks

UNIT-III

5	a)	Explain how an ADC can be interfaced to a microprocessor. Give the required instruction sequence to acquire on sample from ADC.	7 Marks
	b)	Explain the operation programming **mode 0** of 8255 with an example and sketch timing diagram.	7 Marks
		(OR)	
6		Illustrate the interfacing 4 x 4 keyboard with 8086 microprocessor. Draw the flowchart of the keyboard scan routine for the system.	14 Marks

UNIT-IV

7	a)	Draw the necessary circuit to interface 8251 to an 8086 based system with an address 0A0H. Write the sequence of instructions to initialize 8251 for synchronous transmission with odd parity, single SYNC character, 8 bit data character.	8 Marks
	b)	Explain the RS 232C to TTL interfacing.	6 Marks
		(OR)	
8	a)	Draw the block diagram of 8251 and explain each block in detail.	7 Marks
	b)	Give the command instruction and status register format of 8251.	7 Marks

UNIT-V

9	a)	Justify the statement "8051 is built around I/O Ports".	7 Marks
	b)	Explain the basic differences between a microprocessor and a microcontroller.	7 Marks
		(OR)	
10	a)	Write an ALP to generate a square wave of 2KHz on P1.3 of 8051 using interrupts.	7 Marks
	b)	Write an ALP to transfer the message "Sree Vidyanikethan" serially at 4800 baud rate.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

THEORY OF COMPUTATION

[Computer Science and Engineering, Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define Finite Automata. Give few application of the FA. 4 Marks

b) Give an NFA recognizing the Language **(01 U 001 U 010)***. 10 Marks

(OR)

2 a) Given input alphabet Σ = {0,1}. Construct DFA for {W | W is any string except 11 and 111}. 7 Marks

b) Construct DFA equivalent to the NFA's ({p, q, r, s}, {0,1}, δ, p, {s}) where δ is? 7 Marks

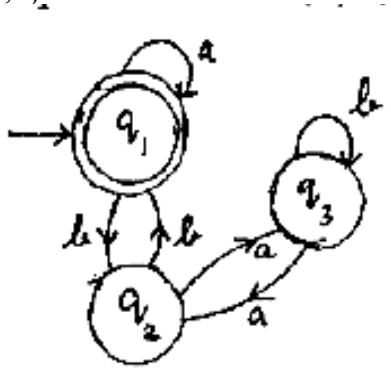
	0	1
P	p ,q	p
Q	r	r
R	S	-
S	S	S

UNIT-II

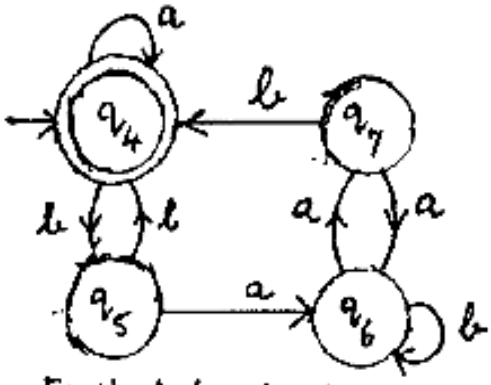
3 Find the regular expression of a language that consists of set of string starts with 11 and as well as ends with 00 using Rij formula. 14 Marks

(OR)

4 Verify whether the finite automata M_1 and M_2 given below are equivalent over {a,b}. 14 Marks



Finite Automaton M_1



Finite Automaton M_2

UNIT-III

5 Construct a PDA for the language **L = {x€{a,b} * | n_a (x) > n_b (x)}**. 14 Marks

(OR)

6 Prove the equivalence of PDA and CFL. 14 Marks

UNIT-IV

7	a)	Write a brief note on Chomsky Hierarchy.	4 Marks
	b)	Design a TM for the language **C= {** $a^i b^j c^k$ **|** ***i*** **x** ***j*** **=** ***k*** **and** ***i, j, k*** **≥ 1}**.	10 Marks

(OR)

8	a)	Write a short note on variants of Turing Machine (TM).	5 Marks
	b)	Give implementation level description of TM that decides the language over the alphabet {0,1} **{*w*	*w* contains twice as many 0's as 1's}**	9 Marks

UNIT-V

9		List the properties of recursive and recursively enumerable languages.	14 Marks

(OR)

10		Explain about undecidability of PCP.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

UNIX INTERNALS

[Computer Science and Engineering, Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail about the process states and process state transitions.	7 Marks
	b)	Discuss about the kernel data structure.	7 Marks
		(OR)	
2	a)	Discuss about the advantages and disadvantages of buffer cache.	7 Marks
	b)	Explain in detail about the disk utilities.	7 Marks

UNIT-II

3	a)	List and explain the principle environmental variables of shell.	7 Marks
	b)	With the help of syntax and example, explain the control structure of a shell programming.	7 Marks
		(OR)	
4	a)	Write a program for shell script to execute the multiple statements.	7 Marks
	b)	Explain the working of shift commands with example script programs.	7 Marks

UNIT-III

5	a)	How the kernel assigns **inode** numbers to a file? Explain.	7 Marks
	b)	Why we will be using link and unlink system calls? Discuss.	7 Marks
		(OR)	
6	a)	Describe about the following system calls: **lseek**, **dup** and **dup2**.	7 Marks
	b)	Give brief description on the working of the following: **mkdir**, **rmdir** and **chdir**	7 Marks

UNIT-IV

7	a)	Explain how an **exec** function replaces the current process with a new process.	7 Marks
	b)	Which system call is used to duplicate the current process? Explain it.	7 Marks
		(OR)	
8	a)	Explain the various dynamic memory allocation functions.	7 Marks
	b)	What system calls are used to free memory that is occupied by other process? Explain in detail.	7 Marks

UNIT-V

9	Write the significance for the following:		14 Marks
	(i) msgget	(ii) msgsnd	(iii) msgctl
	(iv) shmget	(v) shmat	(vi) pipe call
	(OR)		
10	Write short notes for the following:		14 Marks
	(i) shmdt	(ii) shmctl	(iii) semget
	(iv) semctl	(v)semop	(vi) socket communications

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

ELECTRONIC INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	With a neat diagram, explain the operation of Rectifier type A.C voltmeter.	7 Marks
	b)	List the various considerations in choosing an analog voltmeter.	7 Marks
		(OR)	
2	a)	Explain the operation of successive approximation type DVM with a neat diagram.	8 Marks
	b)	List the various specifications of DVM's.	6 Marks

UNIT-II

3	a)	Explain about high frequency measurement using digital frequency meter.	7 Marks
	b)	Describe with the help of suitable circuit diagram, how single and multiple period measurements are carried out using digital frequency meter.	7 Marks
		(OR)	
4	a)	With a neat block diagram, explain the frequency synthesizer.	7 Marks
	b)	Explain the function of Start and Stop gate.	7 Marks

UNIT-III

5	a)	How the vertical axis of an oscilloscope is reflected? How does this differ from the horizontal axis?	6 Marks
	b)	With a neat diagram, explain the time base circuit used in CRO.	8 Marks
		(OR)	
6	a)	Explain the operation of digital storage oscilloscope with a neat block diagram.	8 Marks
	b)	Explain how frequency is measured using Lissajous figures.	6 Marks

UNIT-IV

7	a)	List the merits, demerits and applications of spectrum analyzers.	8 Marks
	b)	Compare the merits and demerits of frequent selective, heterodyne, harmonic distortion analyzers.	6 Marks
		(OR)	
8	a)	What is the necessity of recorders? Explain the operation of XY recorders with necessary waveforms.	8 Marks
	b)	Explain the operation of LED and LCD displays with neat diagrams.	6 Marks

UNIT-V

9	a)	Explain in detail about grounding considerations.	7 Marks
	b)	Explain about shock hazard protection using earth ground.	7 Marks
		(OR)	
10	a)	Explain with the help of a diagram an ESD grounded work bench and ground strap.	7 Marks
	b)	Explain in detail about practical guidelines for shielding.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

INDUSTRIAL INSTRUMENTATION-I

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the measurement of area using Planimeter.	7 Marks
	b)	What is a comparator? List out various fundamental characteristics and uses of a comparator. Also classify the different types of comparators.	7 Marks
		(OR)	
2	a)	Explain the measurement of length using Micrometer.	7 Marks
	b)	Describe how a pneumatic comparator works and briefly enumerate the advantages of differential pneumatic comparators.	7 Marks

UNIT-II

3	a)	Describe the measurement of force using Analytical Balance.	7 Marks
	b)	Explain the working of Load Cell method used for measurement of torque.	7 Marks
		(OR)	
4	a)	Explain the working of Eddy current type dynamometer and compare it with Motor generator type dynamometer.	7 Marks
	b)	Define Force. What are the most commonly used Spring Balances? Explain the working of Helical Spring Balance and compare it with other Spring Balances.	7 Marks

UNIT-III

5	a)	Explain the constructional details and working of bellows. What are the applications of spring loaded bellows? Describe with the help of two bellows elements, how absolute pressure, gauge pressure and differential pressure can be measured. Describe the advantages and disadvantages of bellows.	7 Marks
	b)	Explain the construction, theory, advantages and disadvantages of inductive type of transducers used for measurement of differential pressure.	7 Marks
		(OR)	
6	a)	Describe the principle of working of Ionization gauges. Describe how vacuum can be measured by using them. List their advantages and disadvantages.	7 Marks
	b)	Describe the construction, working and theory of McLeod gauge for measurement of vacuum. List its advantages and disadvantages.	7 Marks

UNIT-IV

7	a)	Describe the construction and working of a DC tachometer generator. Explain its advantages and disadvantages.	7 Marks
	b)	Describe the functioning of a stroboscope and explain how speed of a rotating shaft can be measured using a single pattern and multi pattern disc.	7 Marks
		(OR)	
8	a)	Explain the construction, working, advantages and disadvantages of a Photoelectric tachometer.	7 Marks
	b)	Explain the construction, principle of working, advantages and disadvantages of L.V.D.T type accelerometer.	7 Marks

UNIT-V

9	a)	Describe the theory and working of a Sling Psychrometer used for the measurement of relative humidity. What is its limitation?	7 Marks
	b)	Describe the Differential Pressure method for measuring the value of density.	7 Marks

(OR)

10	a)	Describe the construction and theory of a Capillary Tube Viscometer. Explain how viscosity of both liquids and gases can be measured with it.	7 Marks
	b)	Define consistency. Explain Rotating vane type consistency meter.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

LINEAR AND DIGITAL IC APPLICATIONS

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Distinguish between practical and ideal op-amp. Draw its equivalent circuit.	7 Marks
	b)	With the help of suitable examples, explain how the slew rate affects the frequency response of an op-amp.	7 Marks
		(OR)	
2	a)	Define the following terms: i) Input bias current. ii) Input offset voltage.	4 Marks
	b)	Explain the frequency compensation technique in an op-amp.	10 Marks

UNIT-II

3	a)	What is a comparator? Discuss the applications of comparators.	7 Marks
	b)	Design an op-amp differentiator that will differentiate an input signal with $f_{max} = 100$.	7 Marks
		(OR)	
4	a)	Draw the circuit of Current to Voltage converter and explain its operation.	7 Marks
	b)	Design a first order low pass filter for a high cut-off frequency of 2KHz and pass band gain of 2.	7 Marks

UNIT-III

5	a)	Draw and explain the block diagram of IC566 VCO.	7 Marks
	b)	With a neat sketch, explain the functional diagram of 555 timer in monostable mode.	7 Marks
		(OR)	
6	a)	LSB of a 9-bit DAC is represented by 19.6mV. If an input of 9 zero bits is represented by 0 volts. i) Find the output of the DAC for an input 101101101 and 011011011. ii) What is the Full Scale Reading (FSR) of this DAC?	6 Marks
	b)	Explain any two applications of PLL.	8 Marks

UNIT-IV

7	a)	Draw the CMOS inverter circuit and explain in detail.	7 Marks
	b)	Realize the Boolean function **f = (a' + b) (b + c')** using CMOS transistor circuit.	7 Marks
		(OR)	
8	a)	Which one is the fastest non-saturated logic gate? Explain its operation with circuit diagram.	7 Marks
	b)	Draw the circuits for **TTL OR** logic gate and **CMOS OR** logic gate and explain their working.	7 Marks

UNIT-V

9	a)	Write a Verilog code for SR flip-flop with NAND gates.	7 Marks
	b)	In Verilog HDL, explain port declaration with example.	7 Marks
		(OR)	
10	a)	Using gate level modeling, design full adder with the help of half adder.	7 Marks
	b)	Using two 74 x 138 decoders design a 4 to 16 decoder.	7 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

COMPUTER NETWORKS

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Compare and contrast the network devices repeaters, hubs, bridges and switches.	6 Marks
	b)	Explain in detail about OSI reference model.	8 Marks
		(OR)	
2	a)	What is computer network? What are the advantages of computer networks?	7 Marks
	b)	Explain about 3G mobile phone network.	7 Marks

UNIT-II

3		Write and explain the design issues of data link layer.	14 Marks
		(OR)	
4		Write about sliding window protocol? Explain **1** bit sliding window protocol.	14 Marks

UNIT-III

5		What is IP addressing? How it is classified? How is subnet addressing is performed? Explain with example.	14 Marks
		(OR)	
6	a)	Write count-to-infinity problem, which is occurred in distance vector routing.	7 Marks
	b)	Explain tunneling mechanism.	7 Marks

UNIT-IV

7	a)	Compare and contrast UDP and TCP protocol header formats in transport layers.	6 Marks
	b)	What is three-way hand shake? How it is used for connection establishment.	8 Marks
		(OR)	
8	a)	Write about real time transport protocols.	7 Marks
	b)	Explain about congestion control in TCP.	7 Marks

UNIT-V

9	a)	What is DNS? Describe about DNS in internet.	7 Marks
	b)	Explain about HTTP protocol.	7 Marks
		(OR)	
10	a)	What is cryptography? Explain various components involved in cryptography.	7 Marks
	b)	Explain about one-time pad cryptography with example.	7 Marks

CODE No.:14BT51202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

SOFTWARE ENGINEERING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain two customer myths and their realities with a set of examples.	7 Marks
	b)	Explain rational unified process with a diagram.	7 Marks
		(OR)	
2	a)	Discuss about CMMI levels.	7 Marks
	b)	Illustrate the scrum agile process model and which type of process it is used.	7 Marks

UNIT-II

3		Explain the structure of software requirements document.	14 Marks
		(OR)	
4	a)	Describe inheritance model for a library management system with a diagram.	7 Marks
	b)	List out and explain briefly about metrics specifying non functional requirements for software.	7 Marks

UNIT-III

5		Explain the fundamental software design concepts.	14 Marks
		(OR)	
6	a)	Show the flow of information from analysis model to design model and explain.	6 Marks
	b)	Explain various aspects involved in the user interface design.	8 Marks

UNIT-IV

7		Explain various strategies for conventional software testing.	14 Marks
		(OR)	
8	a)	Discuss about control structure testing.	7 Marks
	b)	Explain various aspects of system testing.	7 Marks

UNIT-V

9	a)	Describe differences between risk components and risk drivers.	7 Marks
	b)	Explain various activities under Software Quality Assurance (SQA).	7 Marks
		(OR)	
10	a)	Discuss about various types of software risks.	7 Marks
	b)	Explain the term software reliability and software safety.	7 Marks

CODE No.:14BT51501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

OPERATING SYSTEMS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the services provided by the operating system?	9 Marks
	b)	Explain the process of handling a user application invoking the **open()** system call.	5 Marks
		(OR)	
2	a)	Explain priority scheduling with an example.	7 Marks
	b)	What is starvation? What is the solution to this problem?	7 Marks

UNIT-II

3	a)	What is critical section of a process? What is the importance of critical section problem?	7 Marks
	b)	Show how to implement the **wait( )** and **signal( )** semaphore operations in multiprocessor environments using the **TestAndSet( )** instruction. The solution should exhibit minimal busy waiting.	7 Marks
		(OR)	
4	a)	Define deadlock prevention and deadlock avoidance. Explain four criteria for deadlock prevention.	7 Marks
	b)	State the necessary condition for deadlock occurrence.	7 Marks

UNIT-III

5	a)	Explain any Three Page Replacement algorithms with examples.	7 Marks
	b)	Explain the difference between logical address physical address with an example.	7 Marks
		(OR)	
6	a)	Explain about Demand Paging with example.	7 Marks
	b)	Explain about Copy-on-Write with example.	7 Marks

UNIT-IV

7	a)	Explain about acyclic graph directory with a diagram.	7 Marks
	b)	Explain indexed allocation with a neat diagram.	7 Marks
		(OR)	
8	a)	What are the possible outcomes of disk write?	7 Marks
	b)	Explain the concept of hierarchical storage management.	7 Marks

UNIT-V

9	a)	What are the steps in DMA transfer?	7 Marks
	b)	Explain kernel I/O structure with a diagram.	7 Marks
		(OR)	
10	a)	Discuss the strengths and weaknesses of implementing an access matrix using access lists that are associated with domains.	7 Marks
	b)	How can systems that implement the principle of least privilege still have protection failures that lead to security violations?	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

SYSTEMS SOFTWARE

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write an addressing modes instruction sets. Explain the instruction formats and addressing modes of SIC/XE.	7 Marks
	b)	Explain the I/O and Programming with examples.	7 Marks
		(OR)	
2	a)	What are the various Registers of SIC? Explain.	7 Marks
	b)	Write a SIC/XE program to copy array A of 100 words to array B of same size.	7 Marks

UNIT-II

3	a)	Explain how the program blocks are assembled.	7 Marks
	b)	Discuss the functions of two pass assemblers.	7 Marks
		(OR)	
4	a)	Write an algorithm for **Pass 1** of assembler.	7 Marks
	b)	Explain how mutipass assembler handles the following forward reference:	7 Marks

```
1.HALFSZ    EQU    MAXLEN/2
2.MAXLEN    EQU    BUFFEND-BUFFER
3.PREVBT    EQU    BUFFER-1
4.BUFFER    RESB   4096
5.BUFFEND   EQU    *
```

Assume that, when assembler goes to line 4, location counter contains 034(Hex).

UNIT-III

5		Explain the features of machine independent assembler with examples.	14 Marks
		(OR)	
6	a)	Compare linking loader and linkage loader.	7 Marks
	b)	Explain briefly the design options of loaders.	7 Marks

UNIT-IV

7	a)	Give the features of macro processors and explain the data structures used in macro processors.	7 Marks
	b)	With an example, explain generation of unique labels in macros.	7 Marks
		(OR)	
8	a)	Explain the advantage and disadvantage of general purpose macro processors.	7 Marks
	b)	Write about implementation of a restricted facility.	7 Marks

UNIT-V

9	a)	List the important four tasks to be accomplished by a text editor for an interactive user computer dialogue.	7 Marks
	b)	Describe the structure of an editor.	7 Marks
		(OR)	
10	a)	Provide the testing and debugging to the programmers.	7 Marks
	b)	Discuss three basic types of computing environments for editors.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2017

DIGITAL SIGNAL PROCESSING

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Determine whether the following signals is periodic or not. In case the signal is periodic, specify its fundamental period. 5 Marks

i) $x(n) = 3\cos\left(5n + \frac{\pi}{6}\right)$ ii) $x(n) = \cos\left(\frac{\pi}{8}\right)\cos\left(\frac{\pi n}{8}\right)$

b) Given a sequence $x(n) = (6-n)\,[u(n)-u(n-6)]$ find 6 Marks

i) $y_1(n) = x(4-n)$ ii) $y_2(n) = x(2n-3)$

c) An analog signal $x(t) = \sin(480\pi t)+3\sin(720\pi t)$ is sampled 600 times per second. Determine the Nyquist sampling rate for $x(t)$. 3 Marks

(OR)

2 a) Examine the given system $y(n) = \cos[x(n)]$ with respect to the following properties: 8 Marks

i) Static or dynamic.
ii) Linear or non-linear.
iii) Time invariant or time varying.
iv) Causal or non-causal.

b) Determine the z-transform and sketch the ROC of the signal 6 Marks

$$x(n) = \begin{cases} \left(\frac{1}{3}\right)^n & ; \quad n \geq 0 \\ \left(\frac{1}{2}\right)^{-n} & ; \quad n < 0 \end{cases}$$

UNIT-II

3 a) Find DFT of $X(k) = e^{-j\left[\frac{4\pi k}{5}\right]} \dfrac{\sin\left(\frac{\pi k}{2}\right)}{\sin\left(\frac{\pi k}{10}\right)}$. 7 Marks

b) Let $x(n) = (n+1),\ 0 \leq n \leq 9$, and $h(n) = \{1, 0, -1\}$. Implement the overlap-save method to compute $y(n)=x(n)*h(n)$. 7 Marks

(OR)

4 a) Find DFT for the following sequence using DIT-FFT algorithm. 7 Marks
$x(n) = [3, -1, 2, 4, -3, -2, 0, 1]$

b) Draw the butterfly structure of 8-point DIF-FFT algorithm and explain how to find DFT of given sequence. 7 Marks

UNIT-III

5 Determine H(z) for a Butterworth filter satisfying the following constraints. 14 Marks

$$\begin{cases} \sqrt{0.5} \leq |H(e^{jw})| \leq 1 & 0 \leq w \leq \frac{\pi}{2} \\ |H(e^{jw})| \leq 0.2 & \frac{3\pi}{2} \leq w \leq \pi \end{cases}$$

With T=1 sec. Apply impulse invariant transform

(OR)

6 Realize the following IIR system functions in the direct form I and II structures. 14 Marks

$$H(z) = \frac{1 + z^{-1}}{1 - \frac{1}{2}z^{-1} - \frac{1}{4}z^{-2}}$$

UNIT-IV

7 The following transfer function characterizes an FIR filter M=11. Determine the magnitude response and show that the phase and group delays are constant. 14 Marks

$$H(z) = \sum_{n=0}^{M-1} h(n)z^{-n}$$

(OR)

8 Obtain the cascade-form and parallel-form realization of the given FIR filter system function. 14 Marks

$$H(z) = 1 + \frac{6}{5}z^{-1} + \frac{7}{5}z^{-2} + \frac{26}{25}z^{-3} + \frac{1}{5}z^{-4}$$

UNIT-V

9 Explain the BUS architecture of DSPs in detail. 14 Marks

(OR)

10 Explain the working of Control Register File of TMS 320C6X Processors. 14 Marks

CODE No.:10BT41301 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

CONTROL SYSTEMS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Give the classification of control systems.
b) Explain the effect of feedback on overall gain of the system.

2. Derive the transfer function for AC servomotor.

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) Check the stability of the system when characteristic equation is,
$\boldsymbol{s^7 + 9s^6 + 24s^5 + 24s^4 + 24s^3 + 24s^2 + 23s + 15 = 0}$
b) Explain the significance of root loci.

5. Sketch Bode plot for the following transfer function and determine the system gain K for the gain cross over frequency to be 5 rad/Sec.

$$G(s)\frac{KS^2}{(1+0.2S)(1+0.02S)}$$

6. For the following system sketch the Nyquist plot and comment on stability.

$$G(S)H(S) = \frac{500}{S(S+6)(S+9)}$$

7. a) What is the basis for the selection of a particular compensation?
b) Explain the procedure to design a log compensator in frequency domain.

8. a) Define controllability of observability and give physical examples.
b) Derive the transfer function if the static model is $\dot{x} = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix} x + \begin{bmatrix} 1 \\ 0 \end{bmatrix} u;\ y = \begin{bmatrix} 1 & 0 \end{bmatrix} x$.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

STRUCTURAL ANALYSIS - II

[Civil Engineering]

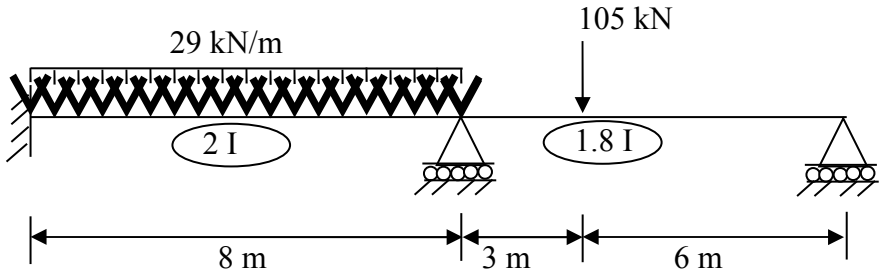
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Two point loads 5kN and 10kN spaced at 4m apart cross a girder of 16m span, the 5kN load leading from left to right. Construct the maximum shear force and bending moment diagram stating absolute maximum values.

2. Four equal loads of 150kN each equally spaced at 2m apart followed by a UDL of 60kN/m at a distance of 1.5m from the last 150kN load cross a girder of 20m span from right to left.

3. Analyse the continuous beam shown in figure 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.



4. Analyze the portal frame shown in figure. Adopt Kani's method. AB = CD = 4m and BC = 3m. EI is constant. Vertical point load is 6kN and Lateral joint load is 5kN.

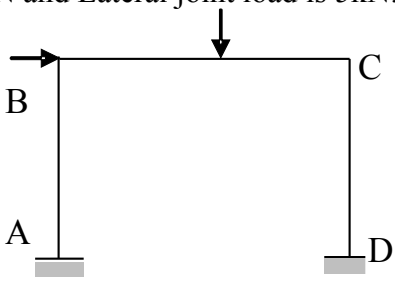
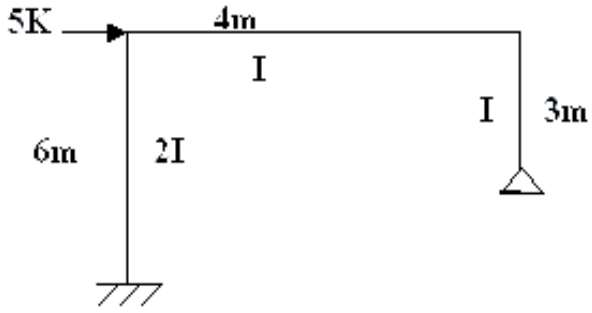


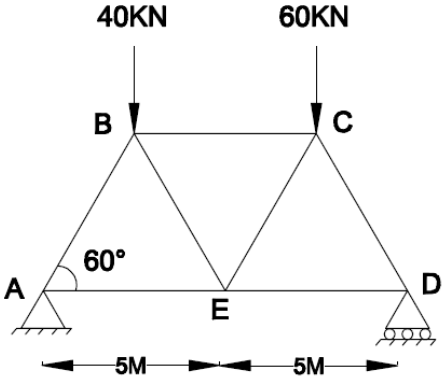
Fig.4

5. By using Kani's method, determine the support moments at all the joints of the Portal frame shown in figure.



6. Find the vertical and horizontal deflections of the joint E of the truss shown in figure. The sectional

area of each member is 1600mm². Take E = 200 kN/mm².



7. Determine the deflection and slope at the free end C of a frame ABC shown in figure. UDL is 10kN/m, horizontal load is 10kN. Column height is 6m, girder length 3m. EI is same for all members.

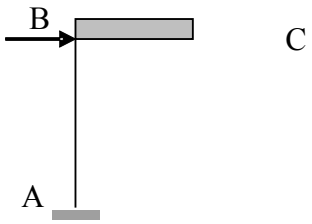


Fig.4

8. a) What do you understand by a substitute frame? How do you select it? Discuss in brief the method of analysis.

b) Explain the cantilever method for analyzing a building frame subjected to horizontal Forces.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

SOIL MECHANICS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is a soil? What are the mineral constituents of a soil? Explain with the help of neat sketches. The structure of any three clay minerals.
b) The mass of a moist sample collected from the field is 645gm, and its oven dry mass is 405.76gm. If G = 2.68 and the void ratio of the soil in the field is 0.83, determine: i) Moist density in the field.
ii) Dry density in the field.
iii) Amount of water to be added per m^3 of soil in the field for saturation.
iv) Saturated density.

2. a) Define sensitivity, thixotropy, density index and consistency.
b) A soil sample has 80% of particles fines than 10mm, 38% fines than 1.0mm, 12% fines than 0.3mm, 7.5% fines than 0.01mm and 4% fines than 0.001mm. Draw grain size distribution curve. Determine percent ground, percent sand percent fine fraction. Classify the soil as per Indian soil classification system.

3. a) What are the methods of estimation of capillary raise in soil? What is the range of capillary raise in different soils?
b) Determine the average vertical and horizontal permeability of a soil mass made up of three horizontal strata, each 1m thick, if the coefficient of permeability of three strata are 1×10^{-2}cm/s, 3×10^{-2}cm/s and 8×10^{-3}cm/s.

4. a) What is a quick sand condition? Why is quick sand condition more common in sandy soils?
b) A 10m layer of stiff saturated clay is underlain by a 3m layer of sand under a hydraulic head of 6m. Calculate the maximum depth of cut that can be made in the clay, given the unit weights of clay and sand as 19.25kN/m^3 and 18.40kN/m^3 respectively.

5. a) Discuss the essential differences between Boussinesq's and Watergoard's theories. For which condition both these theories yield approximately the same value of vertical stress?
b) Two railway wagon lines in a harbour yard are located 6m centre to centre. The average load per meter 5mn in the lines are 100 and 8 0kN/m. Find the vertical stress induced by this loading at a depth of 2m beneath each load and half way between them.

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) 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 5m and 6m 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) Explain the following terms:

i) Critical void ratio. ii) Sensitivity.
iii) Liquifaction. iv) Pore pressure coefficients.

b) A cylindrical specimen of saturated soil fails under an axial stress 150kN/m^2 in an unconfined compression test. The failure plane makes an angle of 52^0 with the horizontal. Calculate the cohesion and angle of internal friction of the soil.

CODE No.:10BT50105 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

ENGINEERING GEOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Describe branches in Geology and explain importance of studying Engineering Geology in civil engineering studies.

2. Write physical properties of the following.
i) Biotite. ii) Bauxite. iii) Hornblende.

3. Write geological classification of igneous rocks and explain how these rocks are good building materials than the other two varieties.

4. Explain the various effects of folding and their civil engineering importance with reference to dams, reservoirs, tunnels, ground water, roads and railway tracks along hill slopes.

5. Draw the neat sketch of Hydrologic cycle and write the fundamental properties which controls the occurrence and distribution of groundwater.

6. Detail the procedure for schlumberger electrical resistivity method and its interpretation to establish the subsurface geological conditions.

7. What are dams and how are they classified. Discuss fully the geological investigations for an arch dam.

8. Write the following.
i) Geological profile in tunneling.
ii) Overbreak.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

POWER ELECTRONICS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the turn on and turn off times of a thyristor.
b) Explain static characteristics of a thyristor with neat sketches.

2. a) Explain the operation of SCR using two transistor analogy.
b) What is commutation? Explain class-A commutation with neat circuit diagram and wave forms.

3. a) Explain the necessity of Snubber circuit and describe its operation.
b) Briefly explain the cooling methods of semiconductor devices.

4. With neat sketch, explain the operation of single phase fully controlled bridge rectifier with R-load for firing angles 60^0 and 120^0.

5. a) Explain the basic principle of a dual converter with neat circuit diagram.
b) Compare the different modes of operation of dual converter.

6. a) Explain the various triggering modes of a TRIAC. Compare their sensitivity.
b) For a 1-ϕ **ac** regulator feeding R-L load, obtain the expression for RMS output voltage.

7. Explain the principle of operation of step-down chopper and also derive output voltage.

8. What is pulse width modulation? Describe various PWM techniques with associated waveforms. How do these different from each other?

CODE No.:10BT50301 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

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'. Derive also 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) Explain the construction and working of any two high pressure boilers with neat sketches.
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 the term 'steam nozzle'. Explain various types of nozzles.
b) Derive an expression for the steam discharged through nozzle.

4. a) What are the various losses generally occur in a steam turbine?
b) Write the difference between the impulse and reaction turbine with particulars.

5. a) Write a short note on 'bleeding of steam turbines'.
b) Explain the state point locus and reheat factor.

6. a) How will you classify condensers? In what respect a jet condenser differs from a surface condenser.
b) Write down main sources of air in condensers.

7. a) Explain the working of a constant volume combustion turbine with a neat sketch.
b) State the fundamental differences between the jet propulsion and rocket propulsion.

8. a) A turbojet engine is travelling at 920km/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 950K, 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.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

DYNAMICS OF MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Determine the required input torque on the crank of a slider-crank mechanism for the static equilibrium when the applied piston load is 1500N. The lengths of the crank and the connecting rod are 40mm and 100mm respectively and the crank has turned through 45^0 from the inner-dead centre.

2. a) What is the gyroscopic effect? Explain.
b) A four wheel trolley car of total mass 2000kg running on rails of 1m gauge, rounds a curve of 25m radius at 40km/hr. The track is banked at 10^0. The wheels have and external diameter of 0.6m and each pair of an axle has a mass of 200kg. The radius of gyration for each pair is 250mm. The height of C.G. of the car above the wheel base is 0.95m. Allowing for centrifugal force and gyroscopic couple action, determine the pressure on each rail.

3. a) What is self-locking and self-energizing brake?
b) A band and block brake has 10 blocks and each block subtends an angle of 15° at the center of the wheel. The two ends of the band are fixed to pins on the opposite sides of the brake fulcrum at distances of 40mm and 200mm from it. Determine the maximum force required to be applied on the lever at a distance of 300mm from the fulcrum to absorb 250kW of power at 280 r.p.m. The effective diameter of the drum is 840mm. Take $\mu = 0.35$.

4. A single cylinder steam engine 25cm stroke, 350 r.p.m has reciprocating masses (including the portion of connecting rod) of 125kg. The connecting rod has a mass of 175kg 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 $5kgm^2$. 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) Define effort and power of a governor.
b) A governor of the Hartnell type has equal balls of mass 3kg set initially at a radius of 200mm. The arms of the bell crank lever are 110mm vertically and 150mm horizontally.
Find: i) The initial compressive force on the spring if the speed for an initial ball radius of 200mm is 240 r.p.m.
ii) The stiffness of the spring required to permit a sleeve movement of 4mm on a fluctuation of 7.5 percent in the engine speed.

6. a) Explain the method of direct and reverse cranks to determine the unbalance forces in radial engines.
b) Deduce expressions for variation in tractive force, swaying couple and hammer blow for an uncoupled two cylinder locomotive engine.

7. a) Explain Dunkerly's method.

b) A 22mm wide and 45mm deep steel bar is freely supported at two points that are 800mm apart and carries a load of 180kg midway between them. Determine the natural frequency of the transverse vibration. Neglecting the weight of the bar.

8. a) Explain Maxwell's reciprocal theorem.

b) Write a short note on properties of structural materials for vibration control.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

DESIGN OF MACHINE ELEMENTS - I

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are various stages in the design of a machine element?
b) List out various constraints encountered by a design engineer.

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 yield strength 700MPa is subjected to static loads consisting of bending moment of 10kN-m and a torsional moment 30kN-m. Determine the diameter of the shaft using two different theories of failure and assuming a factor of safety of 2. Take E = 210GPa and Poisson's ratio = 0.25.

3. a) Explain the terms:
i) Stress Concentration factor. ii) Notch sensitivity.
b) A 25mm diameter shaft is made of forged steel 30 C8 (S_{ut} = 600N/mm^2). There is a step in the shaft and the theoretical stress concentration factor at the step is 2.1. The notch sensitivity factor is 0.84. Determine the endurance limit of the shaft if it is subjected to a reversed bending moment.

4. Design a double riveted single cover butt joint to connect to plates of thickness 8mm. The permissible stresses in tension, shear and crushing are 75MPa, 50MPa and 125MPa respectively.

5. a) What is the difference between ordinary bolt and a stud bolt? Give one application for each of them.
b) A 20kg balancing mass is to be attached to the crank web of an IC engine using two bolts. The speed of the engine is 500 r.p.m. The location of centre of mass of the balancing mass may be taken to be at a distance of 225mm from the axis of the crank shaft. Design the bolts, taking the permissible tensile stress in the bolt material as 60MPa.

6. a) What is cotter joint? Explain how a cotter joint is made with the help of a neat sketch.
b) Design a knuckle joint to transmit 150kN. The design stresses may be taken as 75MPa in tension, 60MPa in shear and 150MPa in compression.

7. a) What are equivalent bending moment and equivalent twisting moment? Design of shafts based on these refer to which theories of failure. Explain.
b) A hollow shaft is to replace a solid shaft of diameter 50mm such that it would be as strong as the solid shaft, in torsion and weighs half of the weight of the solid shaft. Assume both the shafts are of the same material. Determine the diameters of the hollow shaft.

8. Design a flange coupling to connect two shafts which are to transmit 4kW at 2000 r.p.m.

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CODE No.:10BT50502 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

MICRO-PROCESSOR AND INTERFACING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw and explain the architecture of 8086 microprocessor.
b) Explain the register organization of 8086.

2. a) Explain the following two string manipulation instructions.
i) REP. ii) CMPS.
b) Write an assembly language program in 8086 to convert a 16 bit binary number to its Gray code equivalent.

3. a) Compare memory mapped I/O with I/O mapped I/O.
b) Explain 8237 DMA controller architecture and how it is programmed.

4. a) Explain the control word format of 8255 in I/O and BSR mode.
b) Interface the typical 12-bit DAC with 8255 and write a program to generate a triangular waveform of period 20ms. The CPU runs at 6MHz clock frequency.

5. a) Explain about the interrupt structure of 8086 and Interrupt Vector Table.
b) Explain the initialization of 8259 interrupt controller.

6. a) Distinguish between synchronous and asynchronous data transfer methods.
b) Draw and discuss the status word format of 8251.

7. a) Discuss the salient features of Pentium processor.
b) Discuss about the branch prediction of Pentium processor.

8. a) Distinguish between microprocessor and microcontroller.
b) Draw and explain the formats and definitions of the IE and IP registers.

CODE No.:10BT50503 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

DATABASE MANAGEMENT SYSTEMS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Analyze the architecture of DBMS.
b) Explain DDL and DML.

2. a) What are the main steps in database design and their goals? Where actually the ER model is used?
b) Write short notes on the following and give examples to each.
i) Key constraints.
ii) Participation constraint.
iii) Weak entity.
iv) Class hierarchies.
v) Aggregation.

3. a) Discuss the concepts related to structural constraints of a relationship type with examples.
b) Explain the various relational algebra operators with examples.

4. a) Write short notes on nested queries.
b) Describe about complex integrity constraints in SQL.

5. a) List out problems caused by Redundancy.
b) Explain with an example the Boyce-Codd Normal form and 3rd Normal form.

6. a) Discuss about lossless join decomposition.
b) What are properties of transaction? Explain them.

7. a) Explain in detail how the deadlocks are handled.
b) Write short notes on remote backup systems.

8. Mention the purpose of indexing. How this can be done by B+ tree? Explain.

CODE No.:10BT50504 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

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:
i) Multiprogramming. ii) Multitasking. iii) Multiprocessing.

2. a) Explain the following:
i) Context switch. ii) Dispatcher.
b) Explain various multi-thread models in detail.

3. Explain the following in detail:
i) Process synchronization. ii) Readers and writers problem.

4. Is the deadlock preventable? Justify your answer with example and diagram.

5. a) What is Belady's anomaly? Give an example for illustration.
b) What is virtual memory? How can it be implemented?

6. Compare the file system structure in Unix with Windows operating system.

7. What is disk scheduling? Explain different disk scheduling algorithms with examples.

8. What is an access matrix for protection? How it is implemented?

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

THEORY OF COMPUTATION

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Construct a smallest DFA over Σ = {a,b} accepting all strings which have number of a's divisible by 5 and number of b's divisible by 4.
b) Design DFA for even no.of a's and even no.of b's.

2. a) Formally define Mealy and Moore machines.
b) Construct Moore machine to output number modulo 3 where number is the value of the binary string input.

3. a) Show that the regular languages are closed under intersection and complementation.
b) Prove that the language $L = \{a^i b^{3i} c^n - i, n \geq 1\}$ is not a regular.

4. a) Reduce the following grammar G to CNF.G is S→aAD, A→aB/bA, S→ε B→b, D→d.
b) Explain the steps involved in eliminating useless symbols in a given context free Grammar.

5. a) Simplify the following grammar S→A/0C1, A→B/01/10, C→C0/ Є.
b) Convert the given CFG into GNF S→ abSb | aa

6. a) Construct PDA equivalent to the following grammar.
S → aAA
A → aS/bS/a
b) Design pushdown automata which accepts equal number of a's and b's over ∑= {a,b}.

7. a) What is Turing machine? Explain the working of Turing machine with neat diagram.
b) Explain recursive and recursively enumerable languages.

8. a) Explain the various valid modifications of Turing Machines.
b) Construct a Turing Machine to shift over the given string of binary two positions right.

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

CONTROL SYSTEMS

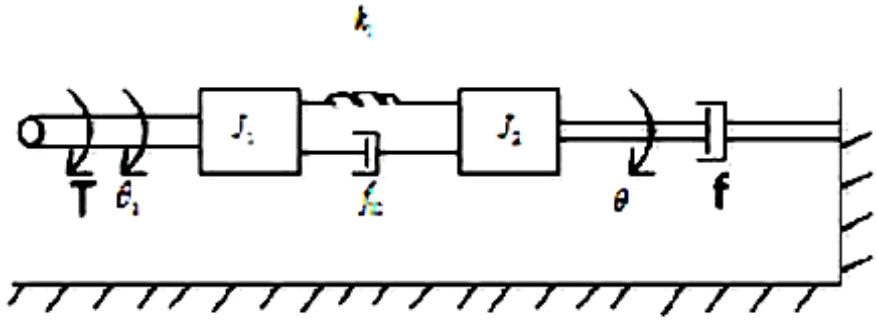
[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the effect of feedback on sensitivity.
b) Explain the temperature control system concepts using open loop as well as closed loop system.

2. a) Determine the transfer function $\frac{\theta(S)}{T(S)}$ for the Mechanical rotational system shown below.



b) Derive the transfer function of a Dc servo motor.

3. a) Derive the expression for time response of a second order system when subjected to unit step input. Also derive the expression for rise time, peak time, peak overshoot and settling time.
b) The open loop transfer function of a unity feedback control system is given by $G(s) = \frac{25}{s(s+5)}$. Calculate the natural frequency, damped frequency, rise time, peak time, peak overshoot and settling time when subjected to unit step input.

4. a) A feedback control system has the forward transfer function $\frac{k(s+40)}{s(s+10)}$ and the feedback transfer function $\frac{1}{(s+20)}$.

b) An open loop system is described by $G(s) = \frac{k}{s(3s^2+25s+6)}$. Sketch the root locus plot for the values of ***k*** ranging from 0 to unity.

5. a) Explain the concept of phase margin and gain margin.
b) Sketch the Bode plot for the following open loop transfer function.

$$G(s)H(s) = \frac{40(1+s)}{(1+5s)(s^2+2s+1)}$$

6. a) Define frequency domain specifications.

b) By using Nyquist criterion, assess the stability if the system is, $G(s) = \dfrac{1}{s^2(1+2s)(1+8s)}$.

7. a) What is the basis for the selection of a particular compensation?

b) Explain the procedure to design a log compensator in frequency domain.

8. a) Define state, state variable and explain the significance of state variable analysis.

b) Given $\dot{X}(t) = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix} \begin{bmatrix} x_1(t) \\ x_2(t) \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u(t)$. Find the solution of the state equation for the unit step input when, $X(0) = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$.

CODE No.:10BT50101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

STRUCTURAL ANALYSIS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is EUDL? Determine the EUDL, for a 10m span simply supported beam, which is supposed to carry moving loads of 18kN and 20kN separated by 2m. The loads move from left to right.

b) A 20kN/m UDL of length 4m crosses a simply supported beam of span 10m. Determine the maximum BM and SF at $3/8^{th}$ of the span due to the moving UDL.

2. Using the influence line diagrams, find

i) the maximum B.M

ii) the maximum positive and negative shears at 4m from the left support A of a simply supported girder of span 10m, when a train of 4 wheel loads of 10kN, 15kN, 30kN and 30kN spaced at 2m, 3m and 3m respectively cross the span with the 10 kN load leading.

3. Analyse the continuous beam shown in Fig.1 by moment distribution method, if support B yields by 10mm. Take EI = 1 x 10^{12}N-mm^2 throughout. Draw the B.M diagram.

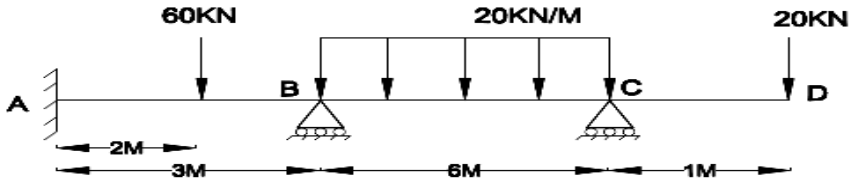


Fig. 1

4. Analyze the portal frame shown in Fig.2. Adopt Kani's method. AB=CD=4m and BC=3m. EI is constant. Vertical point load is 6kN and Lateral joint load is 5kN.

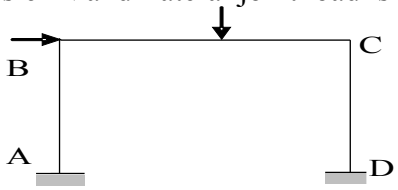


Fig.4

Fig. 2

5. Analyse the continuous beam ABCD shown in Fig.3 by Kani's method . The support C sinks by 5mm. Take E = 2 x 10^5N/mm^2 and I = 3 x 10^7 mm^4.

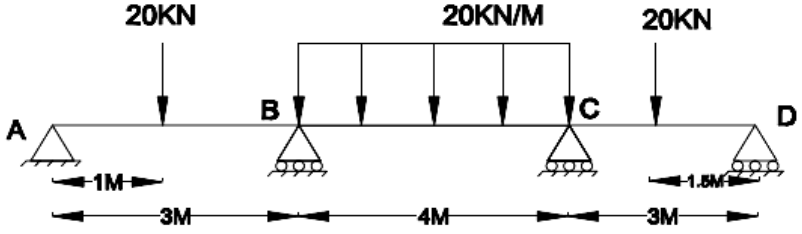


Fig. 3

6. Find the vertical and horizontal deflections of the joint E of the truss shown in Fig.4. The sectional area of each member is 1600mm². Take E = 200 kN/mm².

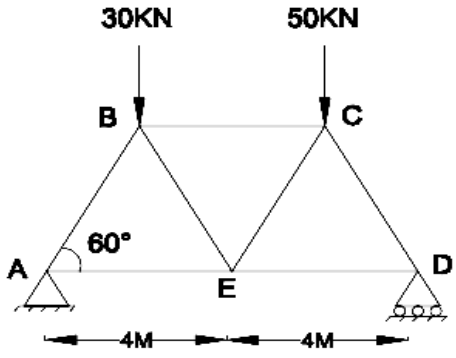


Fig. 4

7. All the members of the frame shown in Fig.5 have same cross sectional area of 20cm². Find the forces in all members due to applied loading. E is constant.

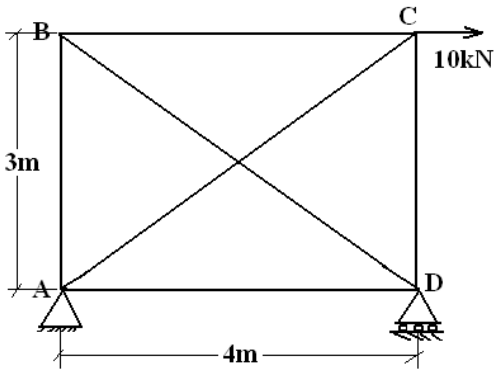


Fig.5

8. Analyse the frame shown in Fig.6 using Portal method. Draw the bending moment diagram and sketch elastic curve. Cross-sectional area of all columns is equal.

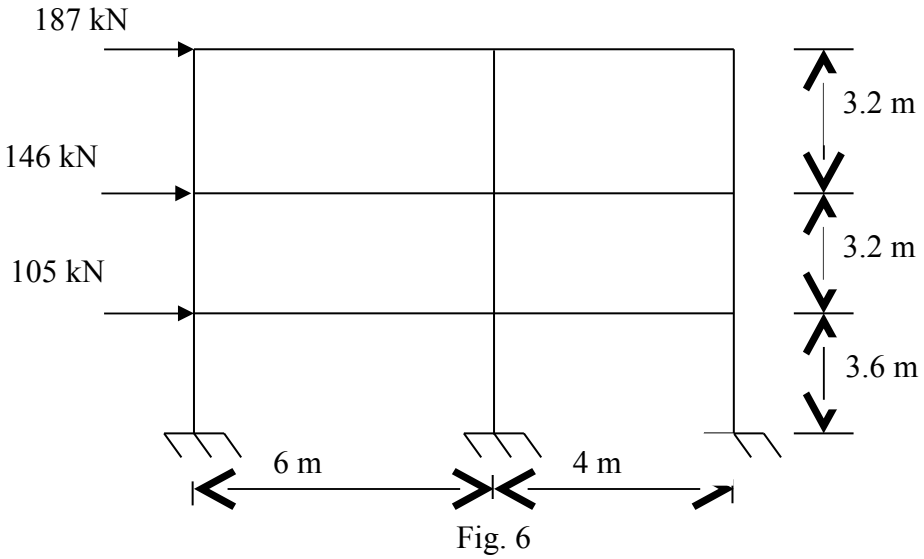


Fig. 6

CODE No.:10BT50103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

ENGINEERING HYDROLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) "Hydrology is an interdisciplinary subject" - Justify the statement with suitable examples.
b) With a neat sketch, explain different phases of a hydrologic cycle.

2. a) Explain any one type of automatic rain range.
b) Describe various methods of computing average rainfall over a basin.

3. a) Mention the various factors which affect infiltration.
b) Explain area velocity method for measurement of discharge.

4. a) Explain the various climatic factors affecting runoff.
b) What is a flow mass curve? Explain how it is constructed.

5. a) What is the unit hydrograph and what are the uses of unit hydrograph?
b) The direct runoff hydrograph resulting from a 5.0cm of effective rainfall of 6hr duration is given below. Determine the area of the catchment and the ordinates of the 6h unit hydrograph.

Time Hrs	0	6	12	18	24	30	36	42	48	54	60	66	72
Direct runoff m^3/s	0	25	175	320	360	310	230	165	105	60	30	10	0

6. a) What are the methods of estimating design flood? What are their limitations?
b) The annual flood peak of a stream is estimated to have 50 year and 100 year floods of $2400m^3/s$ and $2730m^3/s$ respectively. What is 200 year flood for the same stream?

7. a) Define the terms porosity, specific yield, permeability, transmissivity and storage coefficient.
b) A 30cm well fully penetrates a confined aquifer 30 m deep. After a long period of pumping at a rate of 1200 lpm, the draw downs in the wells at 20 and 45m from the pumping well are found to be 2.2 and 1.8 m respectively. Determine the transmissibility of the aquifer. What is the draw down in the pumped well?

8. a) Describe various types of tube wells.
b) During a recuperation test, the water in an open well was depressed by pumping by 2.5m and it recuperated 1.8m in 80 minutes. Calculate the yield from a well 4m diameter under a depression head of 3m.

CODE No.:10BT50104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

SOIL MECHANICS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define the following terms: Void ratio, Porosity, Degree of Saturation, Percentage air voids, Air content and Water content.

b) Show that $\gamma_d = \frac{G\gamma_w}{1+e}$.

2. a) Explain with the help of particle size distribution curves for the following types of soils.
i) Well graded ii) Uniformly graded iii) Gap graded

b) Draw a typical plasticity chart used in I.S. Classification system. Show the different soil groups on the chart.

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) Describe the properties and uses of flow net.

b) A sand deposit of 9m thick overlies a bed of soft clay. The water table is 3m below the ground level. If the sand above the ground water table has a degree of saturation of 60%, plot the diagram showing the variation of the total stress, pore water pressure and the effective stress. Take G = 2.70, void ratio as 0.70.

5. a) What is quick sand condition? Derive the expression for the critical hydraulic gradient.

b) A soil profile at a site comprises of (i) top layer of sand of 3m thickness and saturated unit weight of 20kN/m^3 (ii) a second layer of saturated clay 4m thick with saturated unit weight of 19kN/m^3. The water table is at ground level. Compute and sketch the variation in total pressure, neutral pressure and effective pressure over a depth of 6m.

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) Distinguish between compaction and consolidation. Explain the spring analogy for primary consolidation.

b) A 2.5 cm thick sample of clay was taken from field for predicting the time of settlement for a proposed building which exerts a uniform pressure of 100kPa in the clay stratum. The sample was loaded to 100kPa and proper drainage was allowed from top and bottom in the laboratory. It was seen that 50% of total settlement occurred in 180 seconds. Find the time required for 50% of the total settlement of the building if it is stand on 6 m thick layer of clay which extends from ground surface and is underlain by sand.

8. a) Classify the shear tests based on drainage and explain the merits and demerits of direct shear test.

b) Following are the results at failure of a series of consolidated undrained tests with pore pressure measurement made on a saturated clay soil. Determine the effective shear parameters.

Confining pressure (kg/cm^2)	10	20	30
Maximum Deviator Stress (kg/cm^2)	11.0	15.2	19.3
Pore water pressure (kg/cm^2)			

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CODE No.:10BT50201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

POWER ELECTRONICS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the different modes of operation of a thyristor with the help of its static V-I characteristics.
b) Explain in detail the turn-off mechanism of an SCR.

2. Draw the circuit of synchronized UJT triggering (Ramp triggering) of SCR. Describe its working relevant to voltage wave form.

3. a) Give the design details of Snubber network for **dc** circuit.
b) Explain in detail the over voltage protecting Metal Oxide Varistor (MOV) device.

4. a) Explain the effect of freewheeling diode in rectifier circuits.
b) A single phase semi-converter delivers power to RLE load with R = 5Ω, L = 20mH and E=50V. The **ac** source voltage is 230V, 50Hz. For continuous conduction, find the average value of output current for a firing angle delay of 45^{o}.

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. 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^{o}, calculate RMS value of output voltage and RMS current of each converter.

7. Derive the expression I_{max} and I_{min} currents for a Type-A chopper with RL load.

8. a) With neat sketch, explain the operation of basic series Inverter.
b) Compare the voltage source Inverter with current source Inverter.

CODE No.:10BT50203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

ELECTRICAL POWER TRANSMISSION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the expression for capacitance of an unsymmetrical three phase system regularly transposed.
b) What is the effect of ground on transmission line capacitance?

2. Derive the expression for the capacitance/Km of 1-φ line taking into the account of the effect of ground.

3. Draw the phasor diagrams and derive the expressions for short transmission line for sending end voltage and sending end current. Also derive voltage regulation at lagging current and zero regulation condition.

4. a) Explain the terms attenuation, distortion, reflection and refraction coefficients with respect to traveling waves.
b) Using Bewley's Lattice diagram, represent the voltage and current waveforms of a short circuited line.

5. a) Distinguish between a balanced and unbalanced system by means of symmetrical components of vectors.
b) Explain what is meant by:
i) Sequence impedance. ii) Sequence networks.

6. Explain static shielding method and define string efficiency.

7. Prove that the overhead line has form catenary curve.

8. a) Describe the constructing and working principle of a 3 core belted cable.
b) Explain the relative advantages and disadvantages of various types of grading procedures adopted in underground cables.

CODE No.:10BT50301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

THERMAL ENGINEERING - II

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) In a Rankine cycle, the steam at inlet to turbine is saturated at a pressure of 30 bar and the exhaust pressure is 0.25 bar. Determine i) pump work ii) turbine power iii) Rankine efficiency iv) condenser heat flow and v) dryness fraction at the end of expansion.
Assume steam flow rate of 10 kg/s.
b) What are the methods of improving the efficiency of a Rankine cycle?

2. a) Explain the working principle of a Locomotive boiler with the help of a neat diagram.
b) What do you mean by boiler mountings and boiler accessories? List out them.

3. a) Derive an expression for the maximum discharge through steam nozzle.
b) What do you mean by supersaturated flow? Explain with the help of h-s diagram.

4. a) Derive the condition for maximum blade efficiency of an impulse turbine In terms of nozzle angle from the first principle.
b) In a steam turbine, the steam expands from an inlet condition of 10 bar and 325°C with an isentropic efficiency of 92%. The nozzle is inclined at an angle of 20°C and operates with optimum blade speed ratio. If the blades are symmetrical, calculate the blade angles and power output from the turbine if the mass flow rate is 0.5 kg/s.

5. a) Write a short note on 'bleeding of steam turbines'.
b) Explain the state point locus and reheat factor.

6. a) Explain the working principle of an Evaporative Condenser with a neat sketch.
b) What is a Steam Condenser? How do you classify them?

7. a) Compare the maximum work delivered by an air craft gas turbine which works with two stage compression with inter cooling. The compressor pressure ratio is 4 and the temperature limit is 1000 K, for the given ambient condition 1 bar and 301 K. If the temperature and pressure at 6000 m altitude is -25^{0}C and 0.5 bar, find the percentage change in network output, efficiency and exhaust gas temperature if volume flow rate is 2.5 m^3/s.
b) Explain the importance of regeneration in enhancing the performance of gas turbine.

8. a) Explain the working principle of a Pulse Jet engine with a neat sketch.
b) Enumerate the applications of Rocket propulsion.

CODE No.:10BT50302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

DYNAMICS OF MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. What are free-body diagrams of a mechanism? How are they helpful in finding the various forces acting on the various members of the mechanism?

2. a) Explain the gyroscopic effect of pitching and rolling of a ship in the sea water.
b) A ship is pitching through a total angle of 15°, the oscillation may be taken as simple harmonic and the complete period is 32 sec. The turbine rotor weighs 6 tones, its radius of gyration is 45cm and it is rotating at 2400 r.p.m. Calculate the maximum value of gyroscopic couple set up by the rotor. If the rotation of the rotor is clockwise looking from left, in which direction will the bow tend to turn while falling? What is the maximum angular acceleration to which the ship is subjected while pitching?

3. A band and block brake, having 14 blocks each of which subtends an angle of 15° at the centre, is applied to a drum of 1m effective diameter. The drum and flywheel mounted on the same shaft of mass 2000kg and a combined radius of gyration of 500mm. The two ends of the band are attached to pins on opposite sides of the brake lever at distances of 30mm and 120mm from the fulcrum. If a force of 200N is applied at a distance of 750mm from the fulcrum, find
i) maximum braking torque
ii) angular retardation of the drum and iii) time taken by the system to come to rest from the rated speed of 360 r.p.m.

4. a) What is the application of flywheel?
b) A certain machine requires a torque of $(2000 + 300 \sin \theta)$ N-m to drive it, where θ is the angle of rotation of its shaft measured from some datum. The machine is directly coupled to an electric motor developing uniform torque. The mean speed of the machine is 200 r.p.m.
Find i) The power of the driving electric motor
ii) The moment of inertia of the flywheel required to be used if the fluctuation of speed is limited to ± 2%.

5. a) When Hartnell governor is said to be stable, unstable and isochronous?
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 60mm and 80mm and the corresponding speeds are 160 r.p.m and 75 r.p.m. Each ball has a mass of 2kg. Find the spring stiffness and the initial compression of the central spring.

6. a) What are the primary and secondary forces in reciprocating engines? When secondary forces are neglected?
b) A two cylinder uncoupled locomotive has inside cylinders 0.6m apart. The radius of each crank is 300mm and are at right angles. The revolving mass per cylinder is 250kg and the reciprocating mass per cylinder is 300kg. The whole of the revolving and two-third of the reciprocating masses are to be balanced and the balanced masses are placed, in the planes of rotation of the driving wheels, at a radius of 0.8m. The driving wheels are 2m in diameter and 1.5m apart. If the speed of the engine is 80km.p.h. find hammer blow, maximum variation in tractive effort and maximum swaying couple.

7. a) A vibrating system is having natural frequency 5Hz. When the mass is doubled the frequency is reduced to 2Hz. What is the original mass of the system?

b) The mass of a machine is 100kg. Its vibrations are damped by a viscous dash pot which diminishes amplitude of vibrations from 40mm to 10mm in three complete oscillations. If the machine is mounted on four springs each of stiffness 25kN/m, find

i) The resistance of the dash pot at unit velocity.

ii) The periodic time of the damped vibrations.

8. a) Define the flexibility and stiffness influence coefficients. What is the relation between them?

b) What is a seismic instrument? With neat sketch, explain its working principle.

CODE No.:10BT50303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

MACHINE TOOLS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive shear plane angle from fundamental principles in case of orthogonal cutting.
b) The following data were obtained during orthogonal cutting rake angle=10°, depth of cut=0.5mm and chip thickness is 0.6mm width of cut is 0.4mm. Cutting force is 100N and thrust force is 60 Newton's cutting speed is 100m/min. Calculate coefficient of friction, shear force, normal shear force, shear stress and power required.

2. a) What are the different types of lathes and explain about engine lathe.
b) Give the constructional features of capstan and turret lathe. How is different from engine lathe.

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) Draw the nomenclature of twist drill and explain various elements on it.
b) Explain with help of neat sketch Jig boring machine.

5. a) Sketch vertical milling machine showing all mechanisms. How the job is held on the work table?
b) Differentiate between up milling and down milling.

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. a) Discuss the principles of jigs and fixtures design.
b) List the advantages of jigs and fixture in mass production and discuss various drill jigs.

CODE No.:10BT50304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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 the steps involved in design of machine elements?
b) Why does the tensile strength of cast iron decrease as the thickness of part increases?

2. a) Distinguish between *Strength* and *Rigidity*.
b) A stepped rod has a diameter of 200mm for a length of 1m, a diameter of 150mm for a length of 0.8m and a diameter of 100mm for a length of 1m. The rod is subjected to a tensile load of 5kN. Calculate the factor of safety, if the critical stress of the material is 1.2MPa.

3. A transmission shaft of cold drawn steel 27Mn2 (S_{ut} =500N/mm² and S_{yt} =300N/mm²) 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 10mm thick plates with 25mm diameter rivets. Determine the strength of the joint, if the pitch of rivets is 60mm.
Take σ_t = 120MPa; τ = 90MPa and σ_c = 160MPa.

5. a) Derive an expression for the maximum load in a bolt when a bracket with circular base is bolted to a wall by means of four bolts.
b) Explain the method of determining the size of the bolt when the bracket carries an eccentric load perpendicular to the axis of the bolt.

6. a) Distinguish between Cotter and Knuckle joint.
b) Design a Cotter joint to connect piston rod to the cross head of a double acting steam Engine. The diameter of the cylinder is 300mm and the steam pressure is 1N/mm². The allowable stresses for the material of cotter and piston rod are as follows:
σ_t = 50MPa, σ_c = 84MPa and τ = 40MPa

7. a) Explain 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. a) What are the various ways to prevent the relative rotary motion between the shaft and a mounting on it?
b) Design a muff coupling to connect two shafts which are to transmit 7.5kW at 2000 r.p.m.

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CODE No.:10BT50421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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) Point charges 5 nC and -2 nC are located at (2, 0, 4) and (-3, 0, 5) respectively. Determine the force on a 1 nC point charge located at (1, -3, 7). What will be the Electric field vector E at (1, -3, 7)?
b) Show that in an electrostatic field, electric field intensity E and electrostatic potential V are related as $\mathbf{E} = -\Delta\mathbf{V}$.

2. a) Explain the following terms:
i) Linear.
ii) Isotropic.
iii) Homogenous.
b) Derive the expression for parallel plate capacitance.

3. a) Define Vector magnetic potential.
b) Find magnetic field strength, H, on the Z- axis at a point P(0,0,h), due to a current carrying circular loop, $x^2 + y^2 = A^2$ in Z=0 plane.

4. a) If the electric field strength of an electromagnetic wave in free space is $\bar{E} = 2\cos w\left(t - \frac{z}{v_0}\right)\bar{a}y$ V/m. Find magnetic field.
b) In free space, magnetic field of an electromagnetic wave is $0.4w\epsilon_o \cos(wt - 50x)\bar{a}_z$ A/m. Find electric field and displacement current density.

5. a) Explain uniform plane wave propagation.
b) For the wave propagation in good dielectrics, derive the expression for intrinsic impedance of a good dielectric.

6. a) State and prove Poynting vector and Poynting theorem.
b) Define
i) Surface Impedance.
ii) Total Internal Reflection.
iii) Perpendicular polarization.

7. a) Write short notes on Electrostatic discharge.
b) List out natural and man-made EMI sources and explain them in brief.

8. Write short notes on
i) System Grounding for EMC.
ii) Conductive Coatings.

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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 and explain the instrumentation amplifier circuit using op-amp and discuss its applications.
b) Draw the circuit diagram of an astable multivibrator using op-amp and explain its operation with relevant waveforms.

3. a) Sketch the functional block diagram of IC 555 timer.
b) Write the applications of IC 555 timer.

4. a) Write a detailed note on CMOS logic families.
b) Write a short note on CMOS dynamic electrical behaviour.

5. a) Summarize the difference between TOTEM Pole and Open Collector Output.
b) Design, draw and explain TTL three-state NAND gate operation with its function table.

6. a) Discuss the various steps in VHDL design flow.
b) What are the various modeling styles used in VHDL? Explain them in brief, with suitable examples.

7. a) Design and draw a full subtractor with basic logic gates and develop VHDL data flow program.
b) Design a logic circuit to detect the prime number of a 5-bit input. Write VHDL program in structural model.

8. a) What are shift registers? Explain with an example. Also mention their applications.
b) Write a short notes on PLDs.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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) Explain BFS and DFS.
b) Explain the differences between BFS and DFS.

3. a) Write the Quick sort algorithm and illustrate the operation of the algorithm with an example.
b) Write notes on finding maxima and minima.

4. a) What do you mean by knapsack problem and how it can be solved using greedy method?
b) Solve the problem of optimal storage on tapes using greedy method.

5. a) Explain traveling sales person problem with Dynamic programming.
b) Describe any two shortest path algorithms.

6. a) Write an algorithm for solving n-queen's problem.
b) Explain graph coloring problem. How backtracking approach is useful for assigning different colors to its adjacent vertices?

7. a) Explain the general method of Branch and Bound.
b) Explain the applications of Branch and Bound.

8. a) Write a nondeterministic Knapsack algorithm.
b) Write a short note on nondeterministic algorithms.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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) Distinguish between 8085 and 8086 microprocessors.
b) What do you mean by pipelined architecture? How it is implemented in 8086.

2. a) Explain the following 8086 instructions and their use
i) XLAT ii) DAS
b) Write an assembly language program to exchange a block of N data bytes between source and destination.

3. a) Explain interfacing of EPROMS and SRAMS to 8086 processor.
b) Explain how the 8237 DMA controller transfers 64K bytes of data per channel with eight address lines.

4. a) Write briefly about the different modes of operation of 8255.
b) Explain how a keyboard is interfaced to 8086 through 8255. Draw the necessary interface circuit.

5. a) Explain about the Interrupt structure of 8086 and Vector Interrupt table.
b) Explain the initialization of 8259 interrupt controller.

6. a) Distinguish between synchronous and asynchronous data formats.
b) With the help of neat diagram, explain how 8251 is interfaced with 8085 used for serial communication.

7. a) Discuss the salient features of Pentium processor.
b) Discuss about the Branch prediction of Pentium processor.

8. a) How does 8051 differentiate between external and internal program memory.
b) Explain the interrupt structure of 8051.

CODE No.:10BT50503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

DATABASE MANAGEMENT SYSTEMS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Compare file system versus a DBMS.
b) Discuss about levels of data abstraction in DBMS.

2. a) Describe the relationship between Entities, Attributes, Entity sets and key.
b) Write short notes on the following and give examples to each
i) Key constraints.
ii) Participation constraint.
iii) Weak entity.

3. a) Given the relational schemes:
ENROL (S#, C#, Section) - S# represents student number
TEACH (Prof, C#, Section) - C# represents course number
ADVISE (Prof, S#) - Prof is thesis advisor of S#
PRE_REQ (C#, Pre_C#) - Pre_C# is prerequisite course
GRADES (S#, C#, Grade, Year)
STUDENT (S#, Sname) - Sname is student name
Give queries expressed in relational algebra, tuple calculus and domain calculus for the following:
i) List all students taking courses with Zeba.
ii) List all students taking at least one course that their advisor teaches.
iii) List those professors who teach more than one section of the same course.
b) Discuss on various relational algebra operators with suitable example.

4. a) Explain about designing active databases.
b) Describe about Intersect and Except operators.

5. a) Define functional Dependency.
b) Take an unnormalized data and normalize that data up to 3NF.

6. a) Define serializable schedule. Explain with an example.
b) Discuss the RW, WR and WW conflict.

7. a) Explain the shadow paging.
b) Explain time stamp protocol.

8. a) Give the advantages and disadvantages of RAID level 2 and RAID level 3.
b) Explain the 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 November - 2017

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. Distinguish between pre-emptive and non pre-emptive scheduling. Explain each type with an example.

3. a) Define the structure for critical section.
b) What is critical section problem?
c) Explain two process solutions and multiple process solutions.

4. Is the deadlock preventable? Justify your answer with example and diagram.

5. a) Explain the similarities and differences between paging and segmentation.
b) What is virtual memory? How can it be implemented?

6. a) How free space is managed using bit vector implementation.
b) Explain different free space management techniques.

7. What is disk scheduling? Explain different disk scheduling algorithms with examples.

8. What is domain protection? Explain how domain protection is done in UNIX and MULTICS.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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) Compare deterministic and non-deterministic finite automata.
b) Construct deterministic finite automata to recognize the following.
i) Strings of binary ending with the pattern **'101'**
ii) Strings of binary with even length.

2. a) State and explain the closure properties of regular sets.
b) Check whether the following languages are regular or not
i) $L = \{WW^R \mid W \text{ is a string of binary numbers}\}$.
ii) $L = \{a^{2i} \mid i \geq 0\}$.

3. a) Find regular grammars for the set of all strings must end with **01** over **{0, 1}***.
b) P.T the language $L = \{a^n b^m c^n - n \geq 1\}$ is not a regular.

4. a) Construct NFA for the following Grammars
i) **S→Aa/Bb , A→Aa/a , B→Bb/b**
ii) **S→A0/B1 , A→A0/0 , B→B1/1**
b) Check whether the given grammar is Ambiguous or not and derive **"aabbabbaba"** using LMD or RMD **S→ASA/ASB/BAS/A/B**, **A→AS/SA/a/aS**, **B→b/BS/SB/bS**.

5. a) What do you mean by ambiguity? Show that the grammar **S → S/S, S → a** is ambiguous.
b) Show that the grammar **G** with production **S→a/aAb/abSb**, **A→aAAb/bS** is ambiguous.

6. a) Design a pushdown automata which accepts **L={ ww^r | w € (a+b)*}.**
b) With a neat diagram, show the working of a push down automata and define language accepted by a pushdown automata.

7. a) Discuss various types of Turing machines.
b) Define LBA and write the equivalence of LBA's and CFG's.

8. a) What are undecidable problems? Explain why PCP problem is considered undecidable.
b) Explain the various valid modifications of Turing Machines.

CODE No.:14BT4HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

BUSINESS COMMUNICATION AND PRESENTATION SKILLS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the flow of communication.	7 Marks
	b)	What is 'grapevine'? Is it always harmful? If not why?	7 Marks
		(OR)	
2	a)	Discuss the merits and demerits of assertive communication with suitable examples.	7 Marks
	b)	Illustrate the roles of a manager.	7 Marks

UNIT-II

3	Discuss differences in paralanguage of people in various cultures.	14 Marks
	(OR)	
4	"Non-verbal communication is more important than verbal communication". Discuss.	14 Marks

UNIT-III

5	Define memo. What are the different kinds of memos?	14 Marks
	(OR)	
6	Identify the main components of a business letter. When is "yours faithfully" used and when is "yours sincerely" used?	14 Marks

UNIT-IV

7	You are team leader of a project. Explain the benefits of giving team presentations instead of presentations by individuals.	14 Marks
	(OR)	
8	What are the dos and don'ts of a presentation?	14 Marks

UNIT-V

9	a)	What is a resume? What is its main function?	7 Marks
	b)	Discuss the features of a good resume.	7 Marks
		(OR)	
10		What are the various types of interviews? How do you screen the job applicants?	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

PROFESSIONAL ETHICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is meant by professional conscience and right of conscientious refusal?	6 Marks
	b)	Explain the expected confidentiality to be maintained by the engineer while he shifts to another organization similar in service as the previous one.	8 Marks
		(OR)	
2	a)	What is moral autonomy?	6 Marks
	b)	An engineer from a company in Bangalore is sent for submission of tender papers to New Delhi. He took drinks and submitted the bill as laundry bill. Recommend action using theory?	8 Marks

UNIT-II

3	a)	Discuss briefly on ethical theory of right action. Differentiate Act Utilitarian and Rule Utilitarian.	8 Marks
	b)	What are the different ethical theories available for right action, self interest and duty ethics?	6 Marks
		(OR)	
4	a)	Explain what are morals and values.	6 Marks
	b)	Explain the following theories of right action: i) Theory based on utilitarianism. ii) Theory based on duty.	8 Marks

UNIT-III

5	a)	How does the 'code of ethics' provide discipline among the engineers?	6 Marks
	b)	"Just like the results of experiments, the final outcome of engineering projects too is generally uncertain". Discuss.	8 Marks
		(OR)	
6	a)	Write short notes on Challenger case.	6 Marks
	b)	Explain why engineers are regarded as responsible experimenters.	8 Marks

UNIT-IV

7	a)	Discuss the various rights of the engineers with examples.	6 Marks
	b)	"Respect for authority creates lot of conflicts in employees". Discuss the statement with suitable examples.	8 Marks
		(OR)	
8	a)	Briefly discuss about the Intellectual Property Rights (IPR).	6 Marks
	b)	What is whistle blowing? Discuss about main features of it.	8 Marks

UNIT-V

9	a)	What is meant by computer ethics?	6 Marks
	b)	What are the different forms of relativism in existence of the formation of a MNC?	8 Marks
		(OR)	
10	a)	How do professional societies help in conflicts involving engineers in moral issues?	6 Marks
	b)	What expectations from engineers are required to serve for the highest standards of professional obligations?	8 Marks

CODE No.:14BT5HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 "Managerial economics helps in decision making in the framework of uncertainty and scarcity of resources". Elucidate the statement. 14 Marks

(OR)

2 Define law of demand and explain with the help of demand schedule and demand curve. 14 Marks

UNIT-II

3 Define isoquant. Can an isoquant be concave to the origin? 14 Marks

(OR)

4 The following data was extracted from the books of Real Toys: 14 Marks

Particulars	Rs.
Selling price per unit	100
Material cost per unit	36
Labor cost per unit	18
Variable overhead cost per unit	16

If fixed overhead incurred is Rs.8,00,000, compute break even sales.

UNIT-III

5 Define monopolistic competition and explain its features. 14 Marks

(OR)

6 What do you mean by "Capital"? Write about types of capital and their sources. 14 Marks

UNIT-IV

7 Journalize the following transactions in the books of Gaurav for June 2017. 14 Marks

June 1: Gaurav started business with Rs.10,00,000.
June 4: Purchased goods from Aniket worth Rs.40,000.
June 7: Cash purchases Rs.25,000.
June 10: Sold goods to Visakha Rs.30,000.
June 12: Deposited cash into bank Rs.20,000.
June 19: Received commission Rs.3,500.
June 22: Cash Paid to Aniket Rs.25,500.
June 25: Cash stolen from cash box Rs.1,000.
June 27: Cash Received from Vishakha Rs.14,500.
June 30: Interest received Rs.2,400.

(OR)

8 Define journal and distinguish between journal and ledger with suitable examples. 14 Marks

UNIT-V

9 Define gross profit and distinguish between profit and loss account and balance sheet. 14 Marks

(OR)

10 From the following balances, prepare Trading and Profit & Loss Account and Balance sheet as on 31st Dec.2017. 14 Marks

Particulars	Rs.	Rs.
Capital		10,000
Machinery	3,500	
Debtors	2,700	
Drawings	900	
Creditors		1,400
Purchases	9,500	
Wages	5,000	
Bank	1,500	
Opening stock (1.1.2016)	2,000	
Rent	450	
Sales		14,500
Sundry expenses	200	
Carriage	150	

Adjustments:

i) Closing stock as on 31.12.2017 Rs.3,600.

ii) Wages outstanding Rs.200, Sundry expenses outstanding Rs.100.

iii) Rent prepaid Rs.100.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

MANAGEMENT SCIENCE

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the concept of organization as a process and as a structure. 7 Marks

b) Explain the following principles of organization: 7 Marks

i) Authority and responsibility. ii) Unity of command.

iii) Span of control. iv) Principle of exception.

(OR)

2 a) What is matrix organization structure? What are its advantages and disadvantages? 7 Marks

b) What is organizational chart? What is its importance in organizing? 7 Marks

UNIT-II

3 Draw a graph and conduct ABC analysis for the following 10 items in an inventory. 14 Marks

Items	1	2	3	4	5	6	7	8	9	10
Annual Usage	200	3000	25	1100	60	250	140	850	550	80
Unit Cost (Rs.)	11	14	9	6	5	90	6	6	15	9

(OR)

4 The following table gives the result of inspection of 50 items per day for 20 days. Construct the fraction defective or percent defective chart and give inference about the process. 14 Marks

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
No. of Defectives	4	0	3	2	3	5	1	2	2	0	3	4	2	5	1	0	4	4	5	2

UNIT-III

5 Explain the importance and role of a HR manager in an organization. 14 Marks

(OR)

6 Explain the McGregor's X and Y theories. Discuss the appropriateness of both the theories taking suitable situations. 14 Marks

UNIT-IV

7 A project consists of eleven activities. The time estimates for the activities are given in table below:

Activity	Estimated duration (weeks)		
	Optimistic	Most likely	Pessimistic
1- 2	7	17	9
1-3	10	60	20
1-4	5	15	10
2-5	50	110	65
2-6	30	50	40
3-6	50	90	55
3-7	1	9	5
4-7	40	68	48
5-8	5	15	10
6-8	20	52	27
7-8	30	50	40

i) Draw the network diagram for the project. 3 Marks

ii) Determine the critical path. 4 Marks

iii) Find the probability of project completion in 125 days. 7 Marks

(OR)

8 Discuss the role of Entrepreneur in the economic development. 14 Marks

UNIT-V

9 What is JIT? How can a firm be profited by implementing JIT? 14 Marks

(OR)

10 What is an ERP? Discuss the influence of information technology on ERP. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write the non recursive algorithm for finding the Fibonacci sequence and derive its time complexity.	7 Marks
	b)	What are disjoint set operations? Explain the union algorithm with weighting rule.	7 Marks
		(OR)	
2	a)	Write the pseudo code for find factorial of a number using recursion and analyze the space complexity of it.	7 Marks
	b)	Define and write the algorithms for union and find operations.	7 Marks

UNIT-II

3		Write an algorithm for finding the strongly connected components of a directed graph and also analyze its time complexity.	14 Marks
		(OR)	
4	a)	Define level order traversal and write an algorithm to traverse a binary tree in the level order.	7 Marks
	b)	Explain Strassen's algorithm for matrix multiplication.	7 Marks

UNIT-III

5	a)	Define Merging and Purging rules in **0/1** Knapsack problem.	7 Marks
	b)	Write an algorithm for all pairs shortest path and explain with an example.	7 Marks
		(OR)	
6	a)	Explain Matrix Chain multiplication with an example.	7 Marks
	b)	Solve the following **0/1** Knapsack problem using dynamic programming. **P = (11,21,31,33) , w = (2,11,22,15), c = 40, n = 4**	7 Marks

UNIT-IV

7	a)	Explain the general method of branch and bound.	7 Marks
	b)	Explain the principles of LIFO branch and bound.	7 Marks
		(OR)	
8	a)	How many colors are required to color the complete graph with k vertices? Illustrate.	7 Marks
	b)	Using branch and bound technique explain the **0/1** Knapsack problem.	7 Marks

UNIT-V

9	a)	Explain the classes of P and NP.	7 Marks
	b)	Explain the satisfiability problem and write the algorithm for the same.	7 Marks
		(OR)	
10	a)	Explain the Clique problem and write the algorithm for the same.	7 Marks
	b)	Differentiate between NP-Complete and NP-Hard problems.	7 Marks

CODE No.:14BT50101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

STRUCTURAL ANALYSIS - II

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

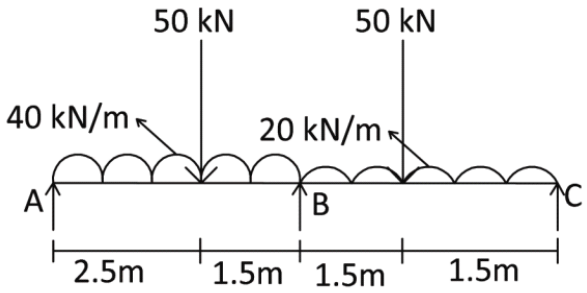
1 Two point loads of 6kN and 8kN spaced apart cross a girder of 18m span, the 6kN load leading from left to right. Construct the maximum S.F. and B.M. diagrams, stating the absolute maximum values. 14 Marks

(OR)

2 A beam has a span of 20m. Draw the Influence line for bending moment and shear force for a section 8m from the left hand support and determine the maximum bending moment and shear force for this section due to two point loads of 8kN and 4kN at a fixed distance of 2m apart rolling from left to right with either of the loads leading. 14 Marks

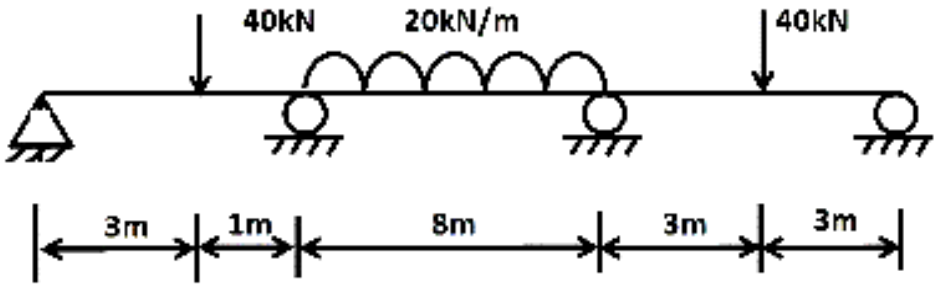
UNIT-II

3 Analyze the beam shown in figure by moment distribution method and draw SF and BMD diagrams due to following support settlements 0.005 and 0.010 at A and C respectively. 14 Marks



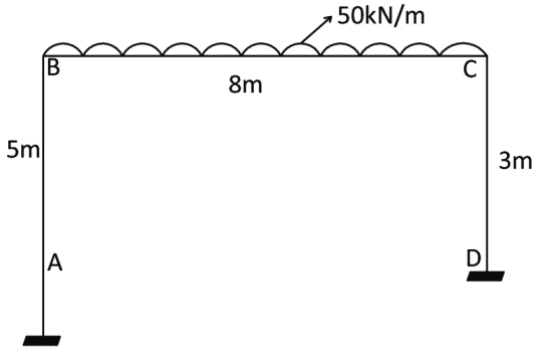
(OR)

4 Explain in detail about displacement method of analysis. Analyze the beam shown in figure by moment distribution method and draw BMD. Assume EI is constant. 14 Marks



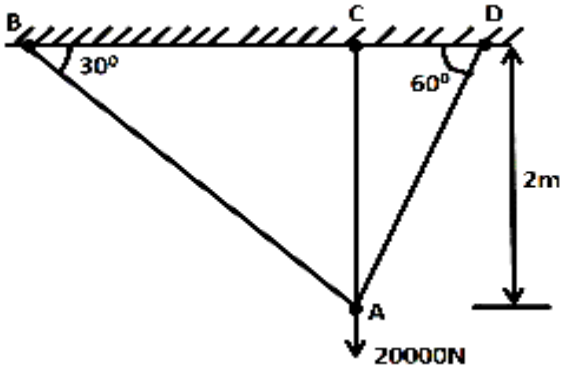
UNIT-III

5 Determine the end moments for the members of the rigid frame shown in figure by Kani's method. Draw the BMD. 14 Marks



(OR)

6 Define strain energy and derive the expression for strain energy due to bending moment. Determine the deflection at point A for the frame shown in figure. Take $E = 2.1 \times 10^5 kN/mm^2$. Members AB and AD have cross sectional area of $8000mm^2$ and member AC has an area of $4000mm^2$. 14 Marks

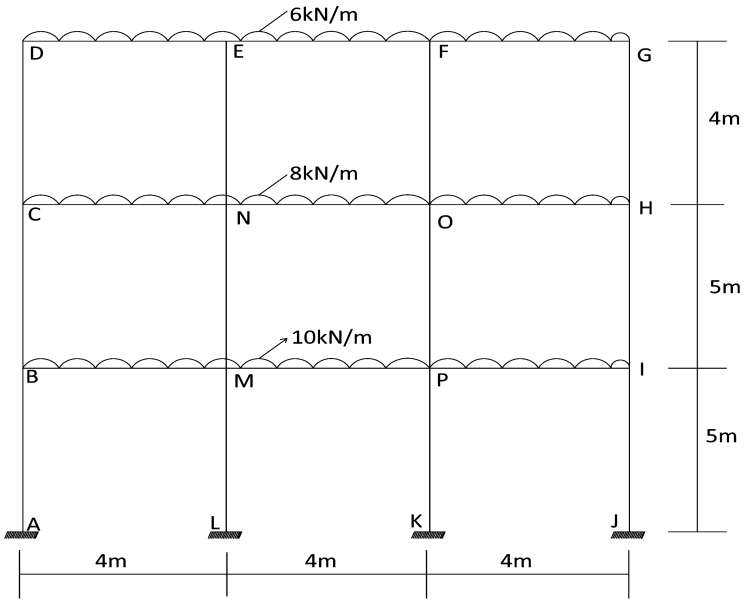


UNIT-IV

7 Distinguish between cantilever method and portal method with suitable example. 14 Marks

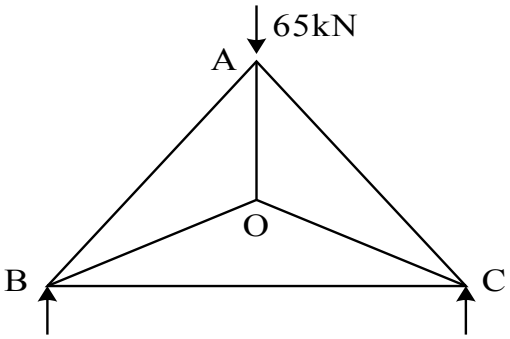
(OR)

8 Analyze the building frame shown in figure for vertical loads using approximate methods. 14 Marks



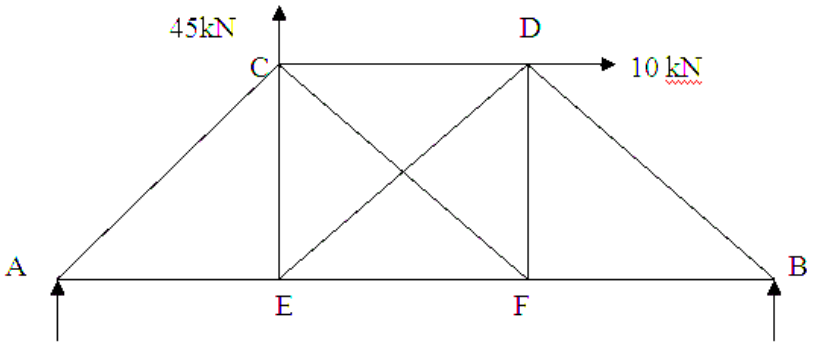
UNIT-V

9 Determine the force in the tie bar BC. The members in tension have a cross-sectional area ‘a’ and the members in compression have a cross-sectional area ‘2a’. 14 Marks



(OR)

10 Analyse the truss shown in figure and determine the forces in all the members. Area and Young’s modulus are constant for all the members. Lengths AE = EF = FB = 4m and CE = DF = 4m. 14 Marks



CODE No.:14BT50102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

REINFORCED CEMENT CONCRETE STRUCTURES-I

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Write short notes on the following with stress diagrams. 14 Marks
i) Working stress method of design. ii) Ultimate load method of design.
iii) Limit state method of design.

(OR)

2 a) What are the roles and responsibilities of the designer? 8 Marks
b) What are the main design considerations during design of RC structures? 6 Marks

UNIT-II

3 Design the reinforcement for a RCC beam to resist an ultimate moment of 300kN-m. Adopt M25 concrete and Fe415 steel. Sketch the details. 14 Marks

(OR)

4 Design a rectangular beam of simply supported beam of span 6m, if the super imposed load is 30kN/m and width of support is 230mm each. Use M20 grade concrete and Fe415 steel. 14 Marks

UNIT-III

5 A reinforced concrete column has an effective length of 2.80m. It carries an axial load of 1800kN. Design the column using M20 concrete and Fe415 steel. 14 Marks

(OR)

6 Design a circular column to carry an axial load of 2000kN. The column has an effective length of 3m. Use M20 concrete and Fe415 steel. 14 Marks

UNIT-IV

7 A Square column 500mm x 500mm carries an axial load of 1500kN. Design a square footing for the column. The safe bearing capacity of the soil is 225kN/m^2. Use M20 concrete and Fe415 steel. 14 Marks

(OR)

8 a) What are the types of footings? 7 Marks
b) Design the depth of footing for the following data: 7 Marks
P_u = 1200 kN, SBC = 200 KN/m^2, use M20 and Fe415.

UNIT-V

9 Design a one way slab simply supported on masonry walls with a clear span of 3m, to support a live load of 4kN/m^2 and floor finishes of 1.5kN/m^2. Use M20 concrete and Fe415 steel. 14 Marks

(OR)

10 Design a two way slab over a room 4m x 6m is simply supported on all four sides on 230mm walls. The live load on the slab is 3kN/m^2 and finishes of 1.5kN/m^2. Use M20 concrete and Fe415 steel. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

WATER SUPPLY ENGINEERING

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Discuss briefly the need for protected water supplies for communities. 7 Marks

b) Distinguish between surface sources and underground sources from quality and quantity considerations. 7 Marks

(OR)

2 a) Estimate the population of a town in 2021 by arithmetic increase and geometric increase methods. Use the senses data given below. 7 Marks

1951	1961	1971	1981	1991	2001
246,000	386,000	694,000	960,000	1,023,000	1,099,000

b) Present the permissible drinking water limits of the following water quality parameters. Explain the effects if they exceed permissible levels of 7 Marks

(i) Fluorides. (ii) Chlorides. (iii) Iron.

UNIT-II

3 a) What are intakes? Naming the different types of intakes and explain any one type with a neat sketch. 7 Marks

b) Explain different methods of jointing C.I. pipes. 7 Marks

(OR)

4 a) How do you estimate storage capacity of distribution reservoir? 7 Marks

b) Mention the various appurtenances in the distribution system. State their functions. 7 Marks

UNIT-III

5 a) What are the objectives of aeration? Explain. 7 Marks

b) How optimum dose of alum is determined in laboratory for coagulation of raw water? 7 Marks

(OR)

6 a) With help of a sketch, explain the working of a rapid sand filter. What are the advantages of RSF over SSF? 7 Marks

b) What do you mean by chlorination and explain advantages of chlorination over other methods of disinfection. 7 Marks

UNIT-IV

7 a) Explain different methods of aeration used in water treatment. 7 Marks

b) What is hardness? Explain the methods used for removal of hardness. 7 Marks

(OR)

8 a) Explaining the implications of fluoride in drinking water, discuss any two methods adopted for defluridation. 7 Marks

b) Write a detailed note on desalination techniques and the challenges in recommending those methods. 7 Marks

UNIT-V

9 a) Write a detailed note on detection and prevention of leakage in buildings. 7 Marks

b) Sketch connection from water main to building and indicate the parts and their functions. 7 Marks

(OR)

10 Write notes on:

i) Water supply fittings. 7 Marks

ii) Layout of water supply in single storey building. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

SOIL MECHANICS

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Derive the relation between unit weight (γ), degree of saturation (S), void ratio (e) and unit weight of water (γ_w). 6 Marks

b) A soil sample has a water content of 30% at full saturation. The specific gravity of solids is 65. Find out its void ratio, dry unit weight, bulk unit weight and quantity of water required for saturation of 100m^3 of soil. 8 Marks

(OR)

2 a) Differentiate between the submerged unit weight and saturated unit weight. 5 Marks

b) Describe I.S. classification of soils. 9 Marks

UNIT-II

3 a) Explain the method of determining coefficient of permeability of fine grained soil. 8 Marks

b) Compute the average coefficient of permeability in directions parallel and perpendicular to the bedding planes of a layered soil deposit consisting of three layers of total thickness 3.4m. The top and bottom layers are each 0.7m thick. The values of coefficient of permeability for the top, middle and bottom layers are k, $2k$ and $3k$ respectively, where $k = 15 \times 10^{-4}$ cm/sec. 6 Marks

(OR)

4 A falling head permeability test is to be performed on a soil sample whose permeability is estimated to be about 3×10^{-5}cm/s. what diameter of the stand pipe should be used if the head is to drop from 27.5cm to 20.0cm in 5 minutes and if the cross-section area and length of the sample are respectively 15cm^2 and 10cm. How much will it take for the head to drop from 37.5cm to 30.0cm. 14 Marks

UNIT-III

5 a) Distinguish between Boussinesq's and Westergaard's theory of stress distribution in soils. 6 Marks

b) An annular ring footing of external and internal radii of 4m and 2m respectively transmits a pressure of 150kN/m^2. Calculate the vertical stress at a depth of 1.0m and 2.0m below the centre. 8 Marks

(OR)

6 a) Discuss the effect of compaction on properties of soil. 6 Marks

b) A soil in the borrow pit is at a dry density of 17kN/m^3 with moisture content of 10%. The soil is excavated from this pit and compacted in an embankment to a dry density of 18 kN/m^3 with a moisture content of 15%. Compute the quantity of soil to be excavated from the borrow pit and the amount of water to be added for 100m^3 of compacted soil in the embankment. 8 Marks

UNIT-IV

7 a) Differentiate between normally consolidated soil and over consolidated soil. 5 Marks

b) Explain square root time fitting method to determine coefficient of consolidation. 9 Marks

(OR)

8 a) State the assumption made in Terzaghi's one dimensional consolidation theory. What do you understand by normally consolidated and over consolidated soil? 7 Marks

b) A layer of soft clay 6m thick lies under a new building and has two-way drainage. The initial over-burden pressure is 250kN/m^2 and the new construction puts an additional pressure of 100kN/m^2. If compression index = 0.5, water content = 45 % and specific gravity of solids = 2.7 for clay. Compute the settlement. 7 Marks

UNIT-V

9 a) Enumerate the factors affecting shear strength of cohesionless soils. 6 Marks

b) What are the advantages of triaxial shear test over direct shear test? 8 Marks

(OR)

10 The following are the results of a triaxial test. Determine shear strength parameters. 14 Marks

Sample No	Cell Pressure (kN/m^2)	Deviator stress (kN/m^2)
1	50	350
2	100	440
3	150	530

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

ENGINEERING HYDROLOGY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define hydrology. Give description of the hydrologic cycle.	8 Marks
	b)	Describe the principle of working of a weighing bucket type recording rain gauge with a neat sketch.	6 Marks
		(OR)	
2	a)	Hydrology is a highly inter-disciplinary science. Justify the statement.	7 Marks
	b)	Describe the three methods of determining the average depth of rainfall over an area.	7 Marks

UNIT-II

3	a)	Explain the evaporation process. What are the factors that affect the evaporation from a water body?	6 Marks
	b)	What is 'evapotranspiration'? Discuss the various factors affecting evapotranspiration.	8 Marks
		(OR)	
4	a)	Define ϕ - index and W-index and bring out the difference between them.	6 Marks
	b)	Discuss the various infiltration equations.	8 Marks

UNIT-III

5	a)	What factors should be considered in selecting a site for a stream gauging station?	7 Marks
	b)	What is flow mass curve and flow duration curve?	7 Marks
		(OR)	
6	a)	Explain the steam flow measurement by area-velocity method.	7 Marks
	b)	What is hyetograph? Explain.	7 Marks

UNIT-IV

7	a)	What is a hydrograph? What are the various components of hydrograph?	7 Marks
	b)	What is Gumbel's method?	7 Marks
		(OR)	
8	a)	What are envelope curves? Explain.	7 Marks
	b)	Explain modified puls method.	7 Marks

UNIT-V

9	a)	What is erosion? Describe the various types of erosion.	7 Marks
	b)	Explain the movement of sediment from watersheds.	7 Marks
		(OR)	
10	a)	Explain the terms Trap efficiency and Life of a reservoir	7 Marks
	b)	Explain the methods used for the control of reservoir sedimentation.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

CONTROL SYSTEMS

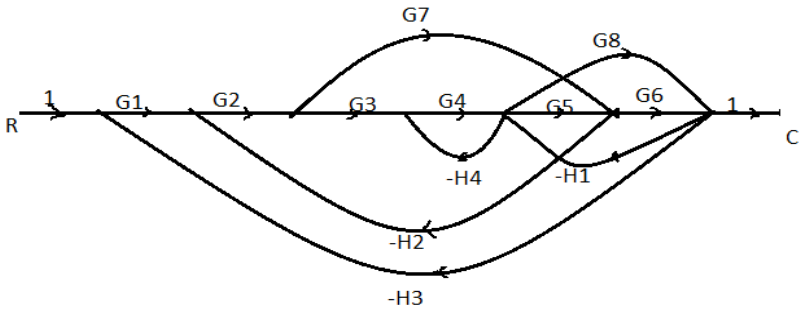
[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

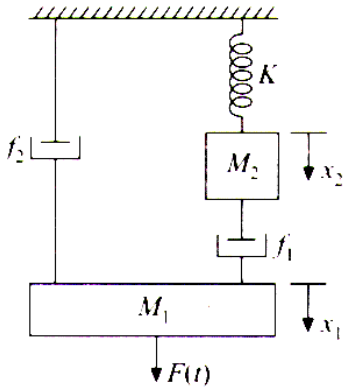
1 a) Find the transfer function of the signal flow graph shown in figure by using Mason's gain formula. 7 Marks



b) Explain the construction and working of Synchro. 7 Marks

(OR)

2 a) Derive the differential equations governing the behaviour of the mechanical system shown. Also draw the analogous electrical circuit based on Force-Voltage analogy. 7 Marks



b) Compare open loop and closed loop system and give an example each. 7 Marks

UNIT-II

3 a) Obtain the time response for first order system with respect to input test signals. 8 Marks

b) Explain about generalized error constants in control systems. 6 Marks

(OR)

4 a) Derive the mathematical expression for delay time, rise time and settling time for the second order system. 7 Marks

b) The overall transfer function of a unity feedback control system is given by $\frac{C(S)}{R(S)}$ 7 Marks

$= \frac{10}{S^2 + 6S + 10}$. Determine the time domain specifications for the given system.

UNIT-III

5 a) State and explain the R-H stability criterion. 6 Marks

b) The characteristic equation of a feedback control system is given by $S^4 + 20S^3 + 15S^2 + 2S + K = 0$. 8 Marks

i) Determine the range of values of K for the system to be stable.

ii) Can the system be marginally stable? If so, find the required value of K and the frequency of sustained oscillations.

(OR)

6 a) Explain the rules to construct the root locus for the open loop transfer function. 7 Marks

b) Sketch the root locus of the open loop transfer function given below. 7 Marks

$$G(s)H(s) = \frac{K}{S(S+2)(S^2+2S+5)}$$

UNIT-IV

7 a) The open loop transfer function of a unity feedback control system is given below $G(s) = \frac{50}{S(S+5)}$. Draw the Nyquist plot and comment on the stability of the closed loop system. 8 Marks

b) A second order system has overshoot of 50% and period of oscillation 0.2sec in step response. Determine resonant peak, resonant frequency and bandwidth. 6 Marks

(OR)

8 a) Derive expressions for resonant peak magnitude and resonant frequency. 8 Marks

b) Derive the transfer functions for Lead and Lag compensation networks. 6 Marks

UNIT-V

9 a) Explain the State space representation of n^{th} order differential equation. 6 Marks

b) Obtain the state transition matrix and determine the time response for the system 8 Marks

$\dot{X} = AX$.

Where $A = \begin{bmatrix} 0 & 1 \\ -2 & 2 \end{bmatrix}$ and initial conditions are $X_1(0) = 1$, $X_2(0) = 1$.

(OR)

10 a) State and explain controllability and observability. 6 Marks

b) The transfer function of a control system is given by $\frac{Y(s)}{U(s)} = \frac{S+2}{S^3+9S^2+26S+24}$ 8 Marks

Check for controllability and observability.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

COMPUTER ORGANIZATION AND ARCHITECTURE

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the basic functional units of a computer with the help of a neat sketch.	7 Marks
	b)	How does user routines and OS routines share a single processor?	7 Marks
		(OR)	
2	a)	Write about register transfers and register transfer language with an example.	7 Marks
	b)	Compute square root for 172_{10} using binary square root algorithm.	7 Marks

UNIT-II

3	a)	Discuss in detail arithmetic micro operations.	7 Marks
	b)	Discuss in detail register transfers, bus and memory transfers.	7 Marks
		(OR)	
4	a)	Explain arithmetic logic shift unit.	8 Marks
	b)	Discuss in detail logic micro operations.	6 Marks

UNIT-III

5	a)	Compare and contrast Micro Programmed control unit and Hardwired control unit.	7 Marks
	b)	Compare and contrast various Read Only Memories (ROM).	7 Marks
		(OR)	
6	a)	Give the block diagram for a 8M X 32 memory using 512K X 8 memory chips.	7 Marks
	b)	Describe the different ways of including caches on processor chip.	7 Marks

UNIT-IV

7	a)	Discuss in detail the microprocessor evolution.	7 Marks
	b)	List various addressing modes of 8085.	7 Marks
		(OR)	
8	a)	Draw the timing diagram for the execution of instruction MVI A, 32H.	7 Marks
	b)	List the sequence of events that occur when 8085 MPU reads from memory.	7 Marks

UNIT-V

9	a)	Discuss in detail about Direct Memory Access (DMA).	7 Marks
	b)	Discuss in detail about Interrupt Driven I/O.	7 Marks
		(OR)	
10		Describe seven segment LED display as an output device.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

SYNCHRONOUS MACHINES

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discriminate salient pole and non-salient pole type alternators.	7 Marks
	b)	Find the no-load phase and line voltage of a star-connected 3-phase, 6-pole alternator which runs at 1200 r.p.m, having flux per pole of 0.1Wb sinusoidally distributed. Its stator has 54 slots having double layer winding. Each coil has 8 turns and the coil is chorded by 1 slot.	7 Marks
		(OR)	
2	a)	Explain briefly load characteristics of alternators.	7 Marks
	b)	Derive the expression for coil span factor and distribution factor.	7 Marks

UNIT-II

3	a)	Develop the phasor diagram of a salient pole alternator for lagging and leading power factor using Blondel's two reaction theory.	7 Marks
	b)	Define synchronous impedance of an alternator and explain how it can be determined experimentally.	7 Marks
		(OR)	
4	a)	What is voltage regulation of an alternator? With necessary diagram, explain zero power factor method to determine the voltage regulation of an alternator.	7 Marks
	b)	A 3.5MVA, 3-phase synchronous generator rated at 6.6kV has 32 poles. It's direct and quadrature axis synchronous reactance as measured by the slip test is 9.6 and 6 respectively. Neglecting armature resistance, determine the regulation and excitation e.m.f needed to maintain 6.6kV at the terminals when supplying a load of 2.5MW at 0.8 power factor lagging.	7 Marks

UNIT-III

5	a)	Derive the expression for time period of oscillation in synchronous machine.	7 Marks
	b)	A 5,000kVA, 3-phase, 10,000V, 50Hz alternate runs at 1500 r.p.m. connected to constant frequency, constant voltage bus bars. If the moment of inertia of entire rotating system is 1.5×10^4 kg-m^2 and the steady short circuit current is 5 times the normal full load current, find the natural time period of oscillation.	7 Marks
		(OR)	
6		Explain the effect of change in excitation and change in mechanical power input on load sharing of alternators operating in parallel.	14 Marks

UNIT-IV

7		Draw the phasor diagram of a synchronous motor. Explain the effect of i) change of excitation if load is constant. ii) change of load if excitation is constant.	14 Marks
		(OR)	
8	a)	Explain the effect of varying excitation on armature current and power factor in a synchronous motor. Draw V-curves and state their significance.	7 Marks

b) What is synchronous condenser? Explain its operation with help of phasor diagram. What are its applications? 7 Marks

UNIT-V

9 a) Explain the operation of a single phase induction motor using split phase technique. 8 Marks

b) Explain working of AC series motor with necessary diagrams and mention its applications. 6 Marks

(OR)

10 a) Explain constructional features and characteristics of AC series motor. 7 Marks

b) Explain why DC servomotors are preferred over AC servomotors for high power applications. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

TRANSMISSION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive an expression for the inductance of a double circuit, 3 phase line whose conductors are situated at the corners of a regular hexagon.	7 Marks
	b)	A 25000KVA, 13.8KV generator has subtransient reactance of 0.2 p.u. and is connected to a transmission line through a transformer rated 30000KVA, 13.8 Δ - 230 Y KV with reactance as 0.008 p.u. If the base to be used in calculations is 100MVA, 220KV for the transmission line, what p.u. values should be used for the transformer and generator reactance?	7 Marks
		(OR)	
2	a)	Explain the necessity of transposition in transmission lines.	7 Marks
	b)	A single phase transmission line has two parallel conductors 3m apart each conductor being 1cm. Calculate the loop inductance per km length of the material of the conductor is i) copper ii) steel with $\mu_r = 100$.	7 Marks

UNIT-II

3	a)	What is Ferranti effect?	2 Marks
	b)	Determine the A,B,C and D constants for a 3 phase, 50Hz, 100km long transmission line having the following uniformly distributed parameters per km per phase : resistance = 0.25Ω, inductance = 2mH, capacitance = 0.014μF.	12 Marks
		(OR)	
4		A three phase 200km long high voltage line has Z = (14.1+j51.48)ohms and y = (0+j1.194 x 10^{-6}) siemens. Find the characteristic impedance, propagation constant and constants A, B, C and D for the line.	14 Marks

UNIT-III

5		Derive the expression for transient current wave. Show that transient current is sum of incident current and reflected current.	14 Marks
		(OR)	
6		What is the significance of Bewley's lattice diagram? Discuss in detail for the case of a line connected to a cable.	14 Marks

UNIT-IV

7	a)	Describe practical methods to improve voltage distribution across the insulators.	7 Marks
	b)	If the voltage across the units in a 2 unit suspension insulator is 60% and 40% respectively of the line voltage, find the ratio of the capacitance of the insulator to that of its capacitance to earth.	7 Marks
		(OR)	
8	a)	What are the types of insulators?	4 Marks
	b)	A string of 5 suspension insulators is connected across 100KV line. Calculate the distribution of voltage on the insulator discs if the capacitance of each disc to earth is 0.1 of the capacitance of the insulator. Also calculate the string	10 Marks

efficiency.

UNIT-V

9	a)	Derive an expression for the sag of an overhead line when the towers are at unequal heights.	7 Marks
	b)	Derive a formula for the electric stress in a single core cable. Where is the stress maximum and minimum?	7 Marks

(OR)

10		Determine the expression for capacitance of a 3-core belted cable.	14 Marks

CODE No.:14BT50301 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

DYNAMICS OF MACHINERY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 The crank and connecting rod of a reciprocating engine are 20cm and 70cm respectively. The crank is rotating in clockwise direction at 120rad/sec. Find with the help of Klein's construction. 14 Marks

i) Velocity and acceleration of the piston.
ii) Velocity and acceleration of the mid-point of C.R.
iii) Angular velocity and angular acceleration of C.R at the instant when the crank is at 30^0 to I.D.C.

(OR)

2 The following data relate to a horizontal reciprocating engine. 14 Marks

Weight of reciprocating parts	= 125kg
Weight of connecting rod	= 100kg
Length of stroke	= 20cm
Length of C.R between centres	= 40cm
Radius of gyration of C.R about an axis through centre of gravity	= 12cm
Distance of centre of gravity of C.R from big end centre	= 16cm
Engine speed	= 750 rpm

Find the resultant inertia torque on the crank shaft when the crank has turned 30^0 from IDC.

UNIT-II

3 a) What is the effect of gyroscopic couple on rolling of ship? Why? 7 Marks

b) The rotor of a turbine yacht rotates at 1200 r.p.m clockwise when viewed from stern. The rotor has a mass of 750kg and radius of gyration of 250mm. Find the maximum gyroscopic couple transmitted to the hull when yacht pitches with a maximum angular velocity of 1rad/s. 7 Marks

(OR)

4 a) Derive expression for coefficient of steadiness. 7 Marks

b) Derive expression for energy stored in flywheel. 7 Marks

UNIT-III

5 With a neat sketch, describe the principle and working of an internal expanding shoe brake. Derive expression for the braking torque. 14 Marks

(OR)

6 A multi-plate clutch has three pairs of contact surfaces. The outer and inner radii of the contact surfaces are 150mm and 80mm respectively. The maximum axial spring force is limited to 3kN and the co-efficient of friction is 0.3. Assuming uniform wear find the power transmitted by the clutch at 1500 r.p.m. 14 Marks

UNIT-IV

7 a) What is meant by effort and power of a governor? Find the expressions for the same in a porter governor. 7 Marks

b) The following data relate to a Hartnell governor. 7 Marks
M = 1.5kg; a = 100mm; b = 40mm; r_1 = 70mm; r_2 = 110mm; N_1 = 260 r.p.m; N_2 = 275 r.p.m. The axis of rotation is 80mm from the fulcrum. Calculate the rate of the spring and the equilibrium speed when the radius of the balls is 80mm.

(OR)

8 a) Why is balancing necessary for rotors of high speed engines? 7 Marks

b) A circular disc mounted on a shaft carries three attached masses 4 kg, 3kg and 2.5kg at radial distances 75mm, 85mm and 50mm and at the angular positions of 450, 1350 and 2400 respectively. The angular positions are measured counter-clockwise from the reference line along x-axis. Determine the amount of the counter mass at a radial distance of 75mm required for the static balance. 7 Marks

UNIT-V

9 A cylinder of mass **M** and radius **r** rolls without slipping on a cylindrical surface of radius **R**. Find the natural frequency for small oscillations about the lowest position. 14 Marks

(OR)

10 a) Explain whirling speed of shaft. 6 Marks

b) Derive the expression for critical speed of shaft with a single disc considering damping. 8 Marks

CODE No.:14BT50302 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

INDUSTRIAL ENGINEERING AND MANAGEMENT

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Fredric Winslow Taylor is regarded as father of scientific management. How do you substantiate this? 14 Marks

(OR)

2 Discuss about corporate planning process and social responsibilities of engineers. 14 Marks

UNIT-II

3 Discuss in detail various factors to be considered for the selection of a layout to setup a cement factory. 14 Marks

(OR)

4 Define reliability. Explain the meaning of series and parallel systems with two engineering examples for each. 14 Marks

UNIT-III

5 Define method study and explain various steps involved in processing method study analysis. 14 Marks

(OR)

6 a) Define work measurement and mention the techniques of work measurement. 7 Marks
b) Explain the stop watch procedure to conduct time study. 7 Marks

UNIT-IV

7 a) List out assumptions in EOQ. 7 Marks
b) Derive an equation for EOQ. 7 Marks

(OR)

8 Explain the concept of value analysis. How is it carried out? 14 Marks

UNIT-V

9 Construct relevant control chart for the following and comment. 14 Marks

Sample No.	01	02	03	04	05	06	07	08	09	10
No. of defectives	2	7	9	0	8	16	2	9	7	1

(OR)

10 Explain the construction and use of a variable control chart. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

THERMAL ENGINEERING - II

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw the diagram of spring loaded safety valve and give its working principle.	8 Marks
	b)	Differentiate between water tube and fire tube boilers.	6 Marks
		(OR)	
2	a)	What is the use of pre-heater in high pressure boiler?	7 Marks
	b)	Explain the working of a economiser with a neat sketch.	7 Marks

UNIT-II

3	a)	Why is Rankine cycle modified? Derive an expression for the efficiency of modified Rankine cycle.	7 Marks
	b)	Derive an expression for draught produced in terms of height of chimney, ambient and flue gas temperatures. State clearly the assumptions made.	7 Marks
		(OR)	
4		Describe the different operations of Rankine cycle. Also derive the expression for its efficiency with neat sketch, p-V, T-s and h-s diagrams of Rankine cycle.	14 Marks

UNIT-III

5		Steam at a pressure of 10 bar and 0.9 dry discharges through nozzle having throat area of 450 mm^2. If the back pressure is 1 bar. Find: i) final velocity of the steam. ii) cross-sectional area of the nozzle at exit for maximum discharge.	14 Marks
		(OR)	
6	a)	Differentiate between jet and surface condensers.	7 Marks
	b)	In a barometric jet condenser, the barometric and vacuum readings are 760 and 660mm Hg. The rise in temperature of cooling water is 20^0C, with its outlet temperature as 40^0C. It deals with 3000kg of steam per hour, which is 90% dry. Calculate: i) Vacuum efficiency. ii) Quantity of cooling water required per hour.	7 Marks

UNIT-IV

7	a)	Distinguish between impulse and reaction turbine.	7 Marks
	b)	Steam leaves the ring of nozzles of an impulse turbine at 450m/s. The velocity is compounded in two rings of moving blade separated by a ring of fixed blades. The moving blades are symmetrical and their tip angles are 30^0, the blade velocity is 75m/s. The friction for each ring of fixed and moving blades is 0.9. Determine the power developed and blade efficiency if the steam flow rate is 5kg/s.	7 Marks
		(OR)	
8		Show that for maximum diagram efficiency of a reaction turbine the blade-steam speed ratio is equal to $\cos\alpha$, where α is the angle of absolute velocity at inlet.	14 Marks

State the assumption made. Derive an expression for maximum efficiency.

UNIT-V

9 Explain the working of a constant pressure open cycle gas turbine with a sketch. In what way the actual cycle differs from the theoretical cycle? 14 Marks

(OR)

10 a) Explain the working principle of a rocket with a sketch. 7 Marks

b) With the aid of the schematic diagram and thermodynamic cycle, explain the working of a turbo jet engine. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

MACHINE TOOLS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the three zones of heat generation in metal cutting.	7 Marks
	b)	Explain the reasons for the formation of built up edge and its effects.	7 Marks
		(OR)	
2	a)	With a neat sketch, explain the nomenclature of a single point cutting tool and its significance.	10 Marks
	b)	Mention the various types of chips and their significance.	4 Marks

UNIT-II

3	a)	Explain the working principle of an engine lathe with a neat sketch.	8 Marks
	b)	What is machinability? What are the factors affecting it?	6 Marks
		(OR)	
4	a)	Sketch and explain the working of two component tool dynamometer.	8 Marks
	b)	List the special operations done on engine lathe with respective diagrams.	6 Marks

UNIT-III

5	a)	With a neat sketch, mention various parts of a shaper.	7 Marks
	b)	Explain how quick return is achieved in shaper.	7 Marks
		(OR)	
6		Classify the drilling machines and mention their applications. With a neat sketch, explain the various parts and their uses of a radial drilling machine.	14 Marks

UNIT-IV

7	a)	Explain a tool and cutter grinder with a diagram.	7 Marks
	b)	Write notes on dynamic balancing of a grinding machine.	7 Marks
		(OR)	
8	a)	Explain in detail various types of natural and artificial abrasives.	8 Marks
	b)	Give a comparison of grinding, lapping and honing processes.	6 Marks

UNIT-V

9	a)	List the differences between a plain milling machine and a universal milling machine.	7 Marks
	b)	Draw a neat sketch of milling fixture and explain briefly.	7 Marks
		(OR)	
10	a)	Distinguish a jig and a fixture.	6 Marks
	b)	Discuss the principles of location and clamping to be followed in jigs and fixtures.	8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

DESIGN OF MACHINE ELEMENTS-I

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the basic modes of failure of mechanical components with examples. 7 Marks

b) Describe the process of selection of engineering materials. 7 Marks

(OR)

2 a) Write general considerations in machine design. 7 Marks

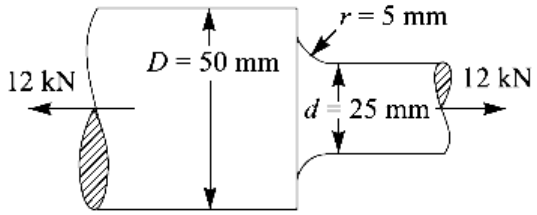
b) Write short notes on the following. 7 Marks

i) Preferred numbers. ii) BIS Codes of materials. iii) Rational design.

UNIT-II

3 a) Illustrate how the stress concentration in a component can be reduced. 7 Marks

b) Find the maximum stress induced in the following case taking stress concentration into account. A stepped shaft as shown in figure and carrying a tensile load of 12kN. 7 Marks



(OR)

4 a) Define stress concentration factor? How to calculate the stress concentration factor for a flat plate with an elliptical hole. 4 Marks

b) A pulley is keyed to a shaft midway between two bearings. The shaft is made of cold drawn steel for which the ultimate strength is 550MPa and the yield strength is 400MPa. The bending moment at the pulley varies from –150N-m to +400N-m as the torque on the shaft varies from –50N-m to +150N-m. Obtain the diameter of the shaft for an indefinite life. The stress concentration factors for the keyway at the pulley in bending and in torsion are 1.6 and 1.3 respectively. Take the following values: Factor of safety = 1.5, Load correction factors = 1.0 in bending and 0.6 in torsion, Size effect factor = 0.85, Surface effect factor = 0.88. 10 Marks

UNIT-III

5 a) Explain bolt of uniform strength with sketches. 6 Marks

b) A bolted joint is used to connect two components. The combined stiffness of the two components is twice the stiffness of the bolt. The initial tightening of the nut results in a preload of 10kN in the bolt. The external force of 7.5kN creates further tension in the bolt. The bolt is made of plain carbon steel 30C8 and the factor of safety is 3. There are coarse threads on the bolt and specify suitable size of the bolt. 8 Marks

(OR)

6	a)	What are the different types of failures in riveted joint?	7 Marks
	b)	Two plates of 10mm thickness each are to be joined by means of a single riveted double strap butt joint. Determine the rivet diameter; rivet pitch, strap thickness and efficiency of the joint. Take the working stresses in tension and shearing as 80MPa and 60MPa respectively.	7 Marks

UNIT-IV

7	a)	Prove that a square key is equally strong is shear and compression.	6 Marks
	b)	A standard splined connection 8 x 36 x 40 is used for a gear and shaft assembly rotating at 700 r.p.m. The length of the gear hub is 50mm the normal pressure on the spines is limited to 6.5N/mm^2. Calculate the power that can be transmitted form gear to shaft.	8 Marks

(OR)

8		Design a bushed pin type of flexible coupling for connecting the motor and centrifugal pump shafts for the following duty: power to be transmitted =15kW, speed in r.p.m = 1000, diameter of motor and pump shafts = 50mm and 40mm respectively, bearing pressure on rubber bush = 0.3 N/mm^2 and allowable shear stress in pins = 20 N/mm^2.	14 Marks

UNIT-V

9		Design a sleeve and cotter joint to resist a tensile load of 60kN. All parts of the joint are made of the same material with the following allowable stresses : σ_t = 60MPa ; τ = 70MPa ; and σ_c = 125MPa.	14 Marks

(OR)

10		Design a knuckle joint to transmit 150kN. The design stresses may be taken as 75MPa in tension, 60MPa in shear and 150MPa in compression	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

AUTOMOBILE ENGINEERING

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw and explain with a schematic diagram working of a four wheel drive automobile.	7 Marks
	b)	Explain briefly the basic requirements of diesel injection system.	7 Marks
		(OR)	
2	a)	Draw a schematic diagram to explain the working of a simple carburetor.	7 Marks
	b)	Explain with a simple sketch, working of CRDI system in an automobile.	7 Marks

UNIT-II

3	a)	What are the requirements of antifreeze mixture used as coolant in automobiles?	7 Marks
	b)	Explain with a schematic diagram, working of magneto ignition system.	7 Marks
		(OR)	
4	a)	Discuss in detail the requirements and the functions of an ignition system of an internal combustion engine.	7 Marks
	b)	Sketch Battery ignition system and explain working principle in detail. List out advantages.	7 Marks

UNIT-III

5	a)	Give a brief account of emissions from CI engines.	7 Marks
	b)	What is EGR and explain how EGR can reduce NO_x emissions from the automobile?	7 Marks
		(OR)	
6	a)	List the salient characteristics of LPG and CNG when used as alternative fuel in automobile engine.	7 Marks
	b)	Describe the characteristics of alternative fuels for automobile engines.	7 Marks

UNIT-IV

7	a)	State and explain the principle of Ackermann steering mechanism.	7 Marks
	b)	Explain the working of a sliding- mesh gear box with a neat sketch.	7 Marks
		(OR)	
8	a)	Construct the centrifugal and explain the working principle in detail.	7 Marks
	b)	Explain the working of a constant mesh gear box with a neat sketch.	7 Marks

UNIT-V

9	a)	Explain with neat sketch elements of a suspension system in detail.	7 Marks
	b)	Differentiate rigid axel suspension and independent suspension.	7 Marks
		(OR)	
10	a)	State the need of breaking system in automotive vehicles. How breaks are classified?	7 Marks
	b)	Explain working principle of hydraulic breaking system with a neat sketch. List out advantages.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

ANTENNAS AND PROPAGATION

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Obtain the relations between the potentials and their sources.	7 Marks
	b)	Derive the expression for the power radiated by an alternating current element and hence its radiation resistance.	7 Marks
		(OR)	
2	a)	Discuss about the far fields of center-fed antennas with respect to different lengths.	8 Marks
	b)	Differentiate Omni-directional and Isotropic directional radiation patterns of an antenna.	6 Marks

UNIT-II

3	a)	Derive an expression for a broadside array.	7 Marks
	b)	Calculate the beam width of main lobe of a broadside array.	7 Marks
		(OR)	
4	a)	Derive the expression for the array factor of a linear broadside array of **'*n*'** elements.	7 Marks
	b)	Derive the expressions of null-null beam width of a uniform linear array.	7 Marks

UNIT-III

5	a)	Explain in detail about the characteristics of microstrip antenna.	6 Marks
	b)	Sketch and explain the constructional features of a helical antenna.	8 Marks
		(OR)	
6	a)	Find the directivity, beam width and effective area of a paraboloidal reflector antenna for which the reflector diameter is 6cm and the illumination efficiency is 65%. The frequency of operation is 10GHz.	7 Marks
	b)	Draw the diagram of pyramidal horn antenna and explain its operation, characteristics and applications.	7 Marks

UNIT-IV

7		Explain the techniques used for measuring the directivity in detail.	14 Marks
		(OR)	
8		Discuss the absolute gain measurements using two-antenna method and three-antenna method with experimental set-up and list the possible errors in measurements.	14 Marks

UNIT-V

9	a)	Explain M-curves and their characteristics.	6 Marks
	b)	Explain space wave propagation mechanism in detail.	8 Marks
		(OR)	
10	a)	Write short notes on: i) Duct propagation. ii) Space wave propagation.	7 Marks
	b)	Derive an expression for effective dielectric constant and critical frequency of an	7 Marks

ionospheric layer.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	With the help of block diagram, explain the elements of digital communication systems.	6 Marks
	b)	Explain different types of companding techniques.	8 Marks
		(OR)	
2	a)	Explain the necessity of non-uniform quantization in a PCM system.	6 Marks
	b)	Draw the block diagram of DM system and explain.	8 Marks

UNIT-II

3	a)	Derive the expression for output signal power for PCM system.	7 Marks
	b)	Explain the effect of thermal noise in PCM.	7 Marks
		(OR)	
4	a)	Obtain an expression for S/N at the output of a DM system.	7 Marks
	b)	Explain the effect of thermal noise in DM.	7 Marks

UNIT-III

5	a)	Write a short note on eye pattern.	7 Marks
	b)	Explain about Correlative coding.	7 Marks
		(OR)	
6	a)	Describe the working principle of QPSK with the help of a neat diagram.	7 Marks
	b)	Derive the expression for Bit Error Probability for BPSK.	7 Marks

UNIT-IV

7	a)	Describe the source coding theorem.	4 Marks
	b)	Explain Huffman coding .Consider a sequence of letters of the English alphabet with their probabilities of occurrence as given here: Letter : a I I m n o p y Probability : 0.1 0.1 0.2 0.1 0.1 0.2 0.1 0.1 Compute two different Huffman codes for this alphabet. In one case, move a combined symbol in the coding procedure as high as possible and in second case, move it as low as possible. Find the variance of average code-word length over the ensemble of letters.	10 Marks
		(OR)	
8	a)	Show that H(X,Y) = H(X) + H(Y/X) = H(Y) + H(X/Y).	8 Marks
	b)	Define the channel capacity in terms of average signal power and noise power.	6 Marks

UNIT-V

9	a)	Explain briefly cyclic codes and decoding of cyclic codes.	6 Marks
	b)	For the (7, 4) single error correcting cyclic code $m(X) = m_0 + m_1 X + m_2X^2 + m_3X^3$ and $X^7 + 1 = (1 + X + X^3)(1 + X + X^2 + X^4)$, draw the encoder and find the code words.	8 Marks
		(OR)	
10	a)	Explain how encoding is done by convolutional codes with an example.	7 Marks

b) Compare Coded and Un-coded systems in detail. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw the circuit diagram of basic CMOS gate and explain the operation.	7 Marks
	b)	Draw the circuit diagram of ECL and explain its operation.	7 Marks
		(OR)	
2	a)	Explain how to estimate sinking current for low output and sourcing current for high output of CMOS gate.	8 Marks
	b)	Analyze the fall time of a CMOS inverter output with R_L=100Ω, V_L=2.5V and C_L=10pF. Assume V_L as stable state voltage.	6 Marks

UNIT-II

3	a)	Write a VHDL entity and architecture for a 3-bit synchronous counter using flip-flops.	6 Marks
	b)	Design a transistor circuit of 2-input TTL NOR gate. Explain the operation with the help of function table.	8 Marks
		(OR)	
4	a)	Discuss in detail about operands and operators in VHDL.	7 Marks
	b)	Explain the various data types supported by VHDL.	7 Marks

UNIT-III

5	a)	Design a 16-bit comparator using 74x85 ICs.	8 Marks
	b)	Implement a full adder with two 4 x 1 multiplexers.	6 Marks
		(OR)	
6	a)	Design a 4-bit carry look ahead adder using gates and explain its operation.	8 Marks
	b)	Design a barrel shifter for 8-bit using three control inputs.	6 Marks

UNIT-IV

7	a)	Design a conversion circuit to convert T flip-flop to JK flip-flop.	7 Marks
	b)	Draw and explain the operation of positive edge triggered D flip-flop.	7 Marks
		(OR)	
8	a)	What is meant by latch and flip-flop? Design a D latch and D flip-flop with neat timing diagrams.	7 Marks
	b)	Design the Johnson counter and write Verilog code for Johnson counter using any modeling style.	7 Marks

UNIT-V

9	a)	Explain clearly about synchronous SRAM with its timing diagrams with and without pipelining.	7 Marks
	b)	Compare the different types of ROM technologies.	7 Marks
		(OR)	
10	a)	Write a Verilog program for modeling of RAM element having 64-Word, 16-Bit.	7 Marks
	b)	Show the memory cycle timing waveforms for the write and read operations. Assume a CPU clock of 150MHz and a memory cycle time of 20ns.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the building blocks of an Op-Amp.	7 Marks
	b)	Explain the characteristics of an ideal Op-Amp.	7 Marks
		(OR)	
2		Explain the frequency compensation techniques applied to operational amplifier.	14 Marks

UNIT-II

3	a)	Draw and explain the operation of a current to voltage converter.	7 Marks
	b)	Draw the circuit of a log amplifier using two op-amps and explain its operation.	7 Marks
		(OR)	
4	a)	Explain the operation of triangular waveform generator using Op-Amp.	7 Marks
	b)	Explain the operation of Op -Amp integrator and specify its applications.	7 Marks

UNIT-III

5	a)	Design a HPF at a cut-off frequency of 1KHz and a pass band gain of 2.	10 Marks
	b)	Why active filters are preferred compared to passive filters?	4 Marks
		(OR)	
6		Draw the circuit diagram of a second order Butterworth low pass filter and derive its transfer function.	14 Marks

UNIT-IV

7	a)	Explain about the phase detector and its working in a PLL.	7 Marks
	b)	Write a short note on monolithic PLL IC 566.	7 Marks
		(OR)	
8		Explain the Astable operation of a 555 Timer IC with applications.	14 Marks

UNIT-V

9	a)	Explain the operation of counter type ADC.	7 Marks
	b)	Discuss about ADC specifications.	7 Marks
		(OR)	
10	a)	Explain the working of weighted resistor type of DAC.	7 Marks
	b)	Discuss about DAC specifications.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

PULSE AND DIGITAL CIRCUITS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is meant by linear wave shaping? Give some examples of linear wave shaping circuits.	6 Marks
	b)	Show that the output of a differentiator circuit is derivative of the input. What are the assumptions to be made in the derivation?	8 Marks
		(OR)	
2	a)	Explain ringing circuit and attenuator.	7 Marks
	b)	Explain the application of an attenuator as CRO probe.	7 Marks

UNIT-II

3	a)	Explain how clipping at two independent levels can be achieved.	7 Marks
	b)	Explain the operation of a diode comparator with a ramp input signal.	7 Marks
		(OR)	
4	a)	State and prove clamping circuit theorem.	7 Marks
	b)	What is the difference between the output from a clipping circuit and a clamping circuit? Explain with neat sketches.	7 Marks

UNIT-III

5	a)	Give the design procedure for emitter coupled monostable multivibrator.	7 Marks
	b)	Design an astable multivibrator to produce an output with 100ms ON period and 50ms OFF period for $V_{CC} = 15V$, $h_{FE} = 50$, I_C (sat) = 100 μA.	7 Marks
		(OR)	
6	a)	Design an astable multivibrator to generate a 5KHz square wave with a duty cycle of 60% and amplitude 12V. Use NPN silicon transistors having $h_{FE(min)} = 70$, $V_{CE(sat)} = 0.3V$, $V_{BE(sat)} = 0.7V$, $V_{BE(cutoff)} = 0V$ and $R_C = 2K\Omega$. Draw the waveforms seen at both collectors and bases.	8 Marks
	b)	Differentiate between symmetrical and asymmetrical triggering.	6 Marks

UNIT-IV

7	a)	Explain Miller time base generator with neat circuit diagram.	8 Marks
	b)	Write about stability of relaxation devices.	6 Marks
		(OR)	
8	a)	Explain pulse synchronization of relaxation devices.	7 Marks
	b)	Explain the basic principle of a bootstrap sweep generator. Draw the circuit and explain its operation with necessary waveforms.	7 Marks

UNIT-V

9	a)	What is Pedestal? How can pedestal be reduced in a sampling gate circuit?	7 Marks
	b)	Draw the circuit of an emitter-coupled bidirectional sampling gate and explain.	7 Marks
		(OR)	
10	a)	Draw the circuit diagram of XOR gate using (AND, OR, NOT) and explain its truth table.	7 Marks
	b)	Draw and explain the circuit diagram of a six-diode sampling gate. Derive expressions for VC_{min}.	7 Marks

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CODE No.:14BT50431 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

MICROPROCESSORS AND INTERFACING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Compare the Maximum and Minimum mode of operation of 8086.	6 Marks
	b)	Write an assembly language program to find GCD of given two 8-bit unsigned integer numbers.	8 Marks
		(OR)	
2	a)	Distinguish Macros and Procedures.	7 Marks
	b)	Write an assembly language program to arrange a given series of hexadecimal bytes in ascending order.	7 Marks

UNIT-II

3	a)	Draw the block diagram of programmable interrupt controller and describe the function of each block in detail.	7 Marks
	b)	List and elucidate the registers of 8257 DMA controller.	7 Marks
		(OR)	
4	a)	Explain the interrupt response sequence of 8086 microprocessor.	7 Marks
	b)	Elucidate 8086 interrupt structure.	7 Marks

UNIT-III

5	a)	Explain about the control words of 8255A.	7 Marks
	b)	Interface alpha-numeric display to 8255 and write an assembly language program to display character 'A'.	7 Marks
		(OR)	
6	a)	Illustrate the different modes of operations of 8255.	7 Marks
	b)	Write an assembly language program to rotate a stepper motor with 50 teeth an angle of 90° clockwise and then 180° anticlockwise direction.	7 Marks

UNIT-IV

7	a)	Draw and explain the functional block diagram of 8251A.	7 Marks
	b)	Explain about serial I/O interfacing standard.	7 Marks
		(OR)	
8	a)	Distinguish synchronous and asynchronous serial communication.	7 Marks
	b)	Draw various DTE and DCE connection using RS232C.	7 Marks

UNIT-V

9	a)	Justify the statement “8051 is built around I/O Ports”.	7 Marks
	b)	Explain the basic differences between a microprocessor and a microcontroller.	7 Marks
		(OR)	
10	a)	Write an assembly language program for 8051 to generate a symmetric square wave at P1.3.	7 Marks
	b)	Explain different modes in which timers/counters in 8051 can be operated.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

THEORY OF COMPUTATION

[Computer Science and Engineering, Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Design a DFA accept the following strings over the alphabets (0,1). The set of all string that contains a pattern 11. Prove this with mathematical induction.	14 Marks
		(OR)	
2	a)	Define Finite Automata (FA). Give few application of the FA.	4 Marks
	b)	Give an NFA recognizing the Language **(01 U 001 U 010)*.**	10 Marks

UNIT-II

3	a)	Discuss on regular expressions.	7 Marks
	b)	Discuss in detail about the closure properties of regular languages.	7 Marks
		(OR)	
4		Construct a non-deterministic finite automation accepting the same set of strings over **{a, b}** ending in **aba**. Use it to construct a DFA accepting the same set of strings.	14 Marks

UNIT-III

5		Construct a PDA for the given grammar **S→aSab|bSb|c**.	14 Marks
		(OR)	
6	a)	Determine whether the following grammar is ambiguous or not? **S→aSa / bsb / ϵ**	6 Marks
	b)	Reduce the following grammar to CNF **S → aB /ab** **S → aAB/a** **S → ABb/b**	8 Marks

UNIT-IV

7		Explain Turing Machine as a computer of integer functions with an example.	14 Marks
		(OR)	
8	a)	What are the various programming techniques for Turing Machine?	6 Marks
	b)	Construct a Turing Machine for multiplication of two numbers M X N.	8 Marks

UNIT-V

9	a)	What are Halting problem and its significance in automata languages?	5 Marks
	b)	State Rice's theorem and the properties of recursively enumerable language.	9 Marks
		(OR)	
10		Prove that if a language is recursive if and only if it and its complement are both recursively enumerable.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

UNIX INTERNALS

[Computer Science and Engineering, Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Differentiate between the Interrupts and Exceptions.	7 Marks
	b)	Explain in detail about the major components of the kernel file subsystem and process control subsystem in operating system architecture.	7 Marks
		(OR)	
2	a)	Explain about the structure of the buffer pool.	7 Marks
	b)	Discuss about the process utilities.	7 Marks

UNIT-II

3	a)	What is a shell? What are its responsibilities? Explain them.	7 Marks
	b)	How to redirect the input and output of a Linux programs? Explain with example.	7 Marks
		(OR)	
4	a)	Explain about the shell responsibilities.	7 Marks
	b)	Discuss about the pipes and I/O redirection.	7 Marks

UNIT-III

5	a)	How to keep the kernel Inode structure small? Explain.	7 Marks
	b)	Write and explain the current structure of a directory entry of system V. What is the maximum number of files that a file system can contain?	7 Marks
		(OR)	
6	a)	Explain the procedure to create a new file descriptor by using open system call.	7 Marks
	b)	Discuss in detail about the fopen( ) and fread( ) system calls.	7 Marks

UNIT-IV

7		Discuss the following: (i) Interrupted system calls (ii) Job control signals (iii) Competing locks	14 Marks
		(OR)	
8	a)	Discuss the procedure to send signal from one process to another process.	7 Marks
	b)	List and explain the steps involved in file locking.	7 Marks

UNIT-V

9	a)	Write a program for popen( ) and explain its implementation.	7 Marks
	b)	Explain how the child process differs from its parent process with an example.	7 Marks
		(OR)	
10	a)	Explain how the pipes are used as standard input and output.	7 Marks
	b)	Write a socket program for working of local client.	7 Marks

CODE No.:14BT51002 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

INDUSTRIAL INSTRUMENTATION-I

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List out the different types of comparator and compare them.	7 Marks
	b)	Sketch and explain the working of a vernier caliper used for internal and external length measurements?	7 Marks
		(OR)	
2	a)	Describe the construction of gauge blocks used for measurement of length.	7 Marks
	b)	Explain the use of protractors and angle gauge blocks for measurement of angle.	7 Marks

UNIT-II

3	a)	Describe the measurement of force using analytical balance.	7 Marks
	b)	Explain the working of load cell method used for measurement of torque.	7 Marks
		(OR)	
4	a)	Explain how the torque of rotating shafts can be measured by the following methods. Explain their advantages and disadvantages. i) Stroboscope method. ii) Digital method.	8 Marks
	b)	Explain the construction and working of eddy current brake. What are its advantages and limitations?	6 Marks

UNIT-III

5	a)	Explain the constructional details and working of bellows. What are the applications of spring loaded bellows? Describe how with the help of two bellows elements absolute pressure, gauge pressure and differential pressure can be measured. Describe the advantages and disadvantages of Bellows.	7 Marks
	b)	Explain the construction, theory, advantages and disadvantages of inductive type of transducers used for measurement of differential pressure.	7 Marks
		(OR)	
6	a)	Explain how calibration of pressure measuring equipment is carried out. Describe the construction and working of a dead weight tester. What are the factors affecting the accuracy of dead weight testers?	7 Marks
	b)	Explain the construction, working and theory of Kundsen gauge for measurement of vacuum. Give its advantages and disadvantages.	7 Marks

UNIT-IV

7	a)	Describe the construction, principle and working of null balance accelerometer.	7 Marks
	b)	Define linear velocity and angular velocity. Explain the construction and working of simplest of the rotational speed measuring equipment.	7 Marks
		(OR)	
8	a)	Explain the working of capacitive type and drag-cup type tachometers with neat diagrams.	7 Marks
	b)	What is a gyroscope? How many types of gyroscopes are there and explain the working of any one of them.	7 Marks

UNIT-V

9	a)	Define humidity. Describe measurement of humidity using commercial dry and wet bulb psychrometer with a neat diagram.	7 Marks
	b)	What is specific gravity? With a neat diagram, describe the measurement of density using pipe vibration method.	7 Marks

(OR)

10	a)	What is density? Explain the construction, principle and working of buoyancy effect densitometer with a neat diagram.	7 Marks
	b)	Define viscosity, kinematic viscosity and specific viscosity. Explain the measurement of viscosity using Searle's rotating cylinder method with a neat diagram.	7 Marks

CODE No.:14BT51003 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

LINEAR AND DIGITAL IC APPLICATIONS

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss DC characteristics of op-amp in detail.	7 Marks
	b)	Show that the output of the subtractor is proportional to the difference between the two input voltages.	7 Marks
		(OR)	
2	a)	With suitable expressions, explain the frequency response of an op-amp.	7 Marks
	b)	With double supply, draw the circuit and explain the operation of inverting amplifier.	7 Marks

UNIT-II

3	a)	What is a comparator? Discuss the applications of comparators.	7 Marks
	b)	Design an op-amp differentiator that will differentiate an input signal with $f_{max} = 100$.	7 Marks
		(OR)	
4	a)	Design a low pass filter at a cutoff frequency of 1KHz with a pass band gain of 2. Draw the circuit and plot its frequency response.	7 Marks
	b)	Explain the operation of AC amplifier.	7 Marks

UNIT-III

5	a)	Why successive approximation type of ADC is preferred? Explain its principle.	7 Marks
	b)	Draw and explain the basic block diagram of PLL.	7 Marks
		(OR)	
6	a)	Explain the operation of dual slope A/D converter.	7 Marks
	b)	Draw and explain VCO working principle and derive a equation for its free running.	7 Marks

UNIT-IV

7	a)	Draw the CMOS inverter circuit and explain in detail.	7 Marks
	b)	Realize the Boolean function **f = (a' + b), (b + c')** using CMOS transistor circuit.	7 Marks
		(OR)	
8	a)	Explain the following terms with reference to CMOS logic: i) Logic levels. ii) Power supply rails.	6 Marks
	b)	Briefly explain about CMOS/TTL interfacing.	8 Marks

UNIT-V

9	a)	Design a full adder using gate level modeling.	7 Marks
	b)	Explain various data types of Verilog HDL in detail.	7 Marks
		(OR)	
10	a)	Explain the structural modeling in Verilog.	8 Marks
	b)	Write a Verilog program for 4**:**1 multiplexer.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

COMPUTER NETWORKS

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe 802.11 wireless LAN protocol stack.	7 Marks
	b)	Differentiate between Routers and Switches.	7 Marks
		(OR)	
2	a)	Write about magnetic media and fiber optic cables with neat diagram.	7 Marks
	b)	Write short notes on different guided media transmission media.	7 Marks

UNIT-II

3	a)	Calculate the CRC for a frame 1101011011 using the generator polynomial $G(x) = x^4 + x + 1$.	7 Marks
	b)	Explain any three framing methods.	7 Marks
		(OR)	
4		Explain the following: i) Stop and wait ARQ. ii) CSMA protocol.	14 Marks

UNIT-III

5	a)	What is congestion? Write about leaky bucket algorithm.	7 Marks
	b)	Explain Hierarchical routing algorithm with neat diagram.	7 Marks
		(OR)	
6	a)	What is congestion? Write about token bucket algorithm.	7 Marks
	b)	Discuss about Link State Routing algorithm.	7 Marks

UNIT-IV

7	a)	Discuss the services provided by transport layer.	7 Marks
	b)	Explain TCP header format with neat diagram.	7 Marks
		(OR)	
8	a)	Explain the techniques to improve QoS.	7 Marks
	b)	Draw and explain the structure of TCP segment.	7 Marks

UNIT-V

9	a)	What are the fields in message header of e-mail system? Explain.	7 Marks
	b)	Write about World Wide Web (WWW).	7 Marks
		(OR)	
10	a)	Write and explain the working of DNS.	7 Marks
	b)	Write short notes on POP3 and SIP.	7 Marks

CODE No.:14BT51202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

SOFTWARE ENGINEERING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the term software and write the characteristics of software.	5 Marks
	b)	Sketch and explain waterfall model.	9 Marks
		(OR)	
2	a)	Describe scrum process model with neat diagram.	7 Marks
	b)	Explain the prototyping process model with a neat diagram.	7 Marks

UNIT-II

3	a)	What are functional and non functional requirements?	5 Marks
	b)	Identify functional and non functional requirements for automation of ATM.	9 Marks
		(OR)	
4	a)	Write a short note on:	
		i) Requirement validation.	4 Marks
		ii) Requirement review.	3 Marks
	b)	What are the problems in writing user requirements and advise suitable guidelines?	7 Marks

UNIT-III

5		Explain various aspects involved in the user interface design.	14 Marks
		(OR)	
6	a)	What are the common activities in design process?	7 Marks
	b)	What do you mean by software design pattern? Explain in detail.	7 Marks

UNIT-IV

7		Explain various strategies for conventional software testing.	14 Marks
		(OR)	
8	a)	What are the testing principles the software engineer must apply while performing the software testing?	4 Marks
	b)	Briefly explain White box testing.	10 Marks

UNIT-V

9	a)	What are software risks? How will you identify them?	7 Marks
	b)	What is software quality? What are SQA activities?	7 Marks
		(OR)	
10	a)	Write short notes on RMMM.	7 Marks
	b)	Define quality and write about quality concepts.	7 Marks

CODE No.:14BT51501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

OPERATING SYSTEMS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the basic instruction cycle.	7 Marks
	b)	Explain the operating systems functions.	7 Marks
		(OR)	
2	a)	Explain priority scheduling with an example.	7 Marks
	b)	What is starvation? What is the solution to this problem?	7 Marks

UNIT-II

3	a)	What is a semaphore? What is the difference between semaphore and mutex?	7 Marks
	b)	Explain about dining philosopher's problem.	7 Marks
		(OR)	
4	a)	Explain Banker's algorithm.	7 Marks
	b)	What is deadlock? What are the methods for handling deadlocks?	7 Marks

UNIT-III

5	a)	Explain the following page allocation algorithm with an example: i) First Fit. ii) Best Fit. iii) Next Fit.	7 Marks
	b)	Explain any two page replacement algorithms with example.	7 Marks
		(OR)	
6	a)	What is the difference between internal fragmentation and external fragmentation? What is the solution to these problems?	7 Marks
	b)	Explain optimal page replacement algorithm with an example.	7 Marks

UNIT-IV

7	a)	Write about different file allocation methods.	7 Marks
	b)	Write about free space management.	7 Marks
		(OR)	
8		Explain the following disk scheduling algorithms with the same example. i) FCFS ii) SSTF iii) SCAN iv) C-SCAN v) LOOK	14 Marks

UNIT-V

9	a)	Explain the concept of buffering.	7 Marks
	b)	Explain unix I/O kernel structure.	7 Marks
		(OR)	
10	a)	Explain the goals of protection.	7 Marks
	b)	Explain about the access matrix with one example.	7 Marks

CODE No.:14BT51502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

SYSTEMS SOFTWARE

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about system software and machine architecture.	7 Marks
	b)	List out registers used in SIC M/C architecture along with their use.	7 Marks
		(OR)	
2	a)	What are the various registers of SIC? Explain.	7 Marks
	b)	Write a SIC/XE program to copy array A of 100 words to array B of same size.	7 Marks

UNIT-II

3	a)	Explain how the program blocks are assembled.	7 Marks
	b)	Discuss the functions of two pass assemblers.	7 Marks
		(OR)	
4	a)	Describe the data structures used in an assembler.	7 Marks
	b)	Discuss about the MASM assembler.	7 Marks

UNIT-III

5		Discuss the features of machine-dependent loader.	14 Marks
		(OR)	
6	a)	With diagram, explain how the calling and loading of a subroutine is done using dynamic linking.	7 Marks
	b)	Explain the different machine independent loader features in detail.	7 Marks

UNIT-IV

7		With a neat flow chart, explain the operation of simple one pass macro processor.	14 Marks
		(OR)	
8	a)	Using an example, explain about macro instructions defining macros.	8 Marks
	b)	What are the basic tasks that any macro instruction processor must perform?	6 Marks

UNIT-V

9		Write short notes on: i) User interface. ii) Editing process.	14 Marks
		(OR)	
10		Explain the functionality of editor structure with neat diagram.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

DIGITAL SIGNAL PROCESSING

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) For the system $y(n) = log_e[x(n)]$, determine whether it is stable, causal, liner and time invariant. 8 Marks

b) Consider the discrete time signal $x(n) = 1 - \sum_{k=3}^{\infty} \delta(n - 1 - n_0)$. Determine the values of the integers M and n_0 so that $x(n)$ may be expressed as $x(n) = u(Mn - n_0)$ 6 Marks

(OR)

2 a) Determine the z-transform and its ROC of the given sequence $x(n)=\{1,2,5,7,0\}$. 4 Marks

b) Compute the response of the system $\boldsymbol{y(n)=0.7y(n-1)-0.12y(n-2)+x(n-1)+x(n-2)}$ to the input $\boldsymbol{x(n)=nu(n)}$. Is the system stable? 10 Marks

UNIT-II

3 a) Find DFT for the following sequence using DIT-FFT algorithm. $x(n) = [3, -1, 2, 4, -3, -2, 0, 1]$ 7 Marks

b) Draw the butterfly structure of 8 point DIF-FFT algorithm and explain how to find DFT of given sequence. 7 Marks

(OR)

4 Given sequence $x_1(n)=\{1,2,1\}$; $x_2(n)=\{1,2,3\}$. Compute the circular convolution in time domain and verify the result using DIF-FFT algorithm. 14 Marks

UNIT-III

5 A digital low pass filter is required to meet the following specifications. 14 Marks

i) Monotonic passband and stopband.
ii) –3dB cutoff frequency of 0.5π rad.
iii) Stopband attenuation of atleast 15dB at 0.75π rad.

Find the system function H(z) using bilinear transformation at T=1 sec

(OR)

6 a) Design an analog Butterworth low pass filter that has a -2dB pass band attenuation at a frequency of 20 rad/sec and atleast -10dB stop attenuation at 30 rad/sec. 10 Marks

b) Derive the relation between digital and analog frequency in impulse invariant transformation. 4 Marks

UNIT-IV

7 The following transfer function characterizes an FIR filter M=11. Determine the magnitude response and show that the phase and group delays are constant. 14 Marks

$$H(z) = \sum_{n=0}^{M-1} h(n) z^{-n}$$

(OR)

8	a)	How will you develop direct form realization of third and fourth order functions of linear phase FIR systems?	10 Marks
	b)	Why do FIR filters have inherent linear phase characteristics?	4 Marks

UNIT-V

9		Explain the BUS architecture of DSPs in detail.	14 Marks
		(OR)	
10		What is MAC? Explain its function with the help of its structural diagram.	14 Marks

CODE No.:14BT5HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May – 2018

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	What is Managerial Economics? What are the basic functions of Managerial Economics?	14 Marks

(OR)

2	What is meant by Demand? Explain the important determinants of demand.	14 Marks

UNIT-II

3	What is Empirical Production Function? Explain the optimum combination of inputs with diagrams.	14 Marks

(OR)

4	What is meant by Break - Even Analysis? How is it helpful to the managers? Explain its limitations.	14 Marks

UNIT-III

5	What is monopolistic competition? How is price determined under it?	14 Marks

(OR)

6	Define pricing. Explain the factors influencing the pricing decision of a company.	14 Marks

UNIT-IV

7	Define accounting. Discuss the objectives and limitations of accounting.	14 Marks

(OR)

8	What is Trail Balance? Draw up a Trail Balance with imaginary figures.	14 Marks

UNIT-V

9 From the following Trail Balance of M/s Rajesh & Sons, prepare Trading and Profit and Loss account for the year ending 31st March, 2016 and Balance Sheet as on that date. 14 Marks

Particulars	**Debit Rs.**	**Credit Rs.**
Purchases	21,750	
Discount allowed	1,300	
Wages	6,500	
Salaries	2,000	
Sales		35,000
Travelling expenses	400	
Commission	425	
Carriage inward	275	
Administration	105	
Trade expenses	600	
Interest	250	
Building	5,000	
Furniture	200	
Debtors	4,250	
Capital		13,000
Creditors		2,100
Cash	7,045	
	50,100	**50,100**

Adjustments:

1. Closing Stock Rs.6,000/-.
2. Outstanding wages Rs.475/-.
3. Depreciation on buildings by 20%.
4. Create a provision for bad debts at 10% on debtors.

(OR)

10 Discuss the role of Computerized Accounting system in modern organizations. What are the advantages of Computerized Accounting system? 14 Marks

CODE No.:14BT5HS02 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

MANAGEMENT SCIENCE

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Discuss the contributions of Henry Fayol to management thought. 14 Marks

(OR)

2 Discuss the methods of communication in modern organization and what could be the different barriers of organization. 14 Marks

UNIT-II

3 a) Explain the various charts used in Method study. 7 Marks

b) Explain various forecasting techniques. 7 Marks

(OR)

4 Determine the control limits for $\overline{X}$ and R charts of $\sum X$ and R charts if $\sum X = 357.50$, $\sum R = 9.90$, number of subgroups = 20. It is given that $A_2 = 0.18$, $D_3 = 0.41$, $D_4 = 1.59$ and $d_2 = 3.735$. Also find the process capability. 14 Marks

UNIT-III

5 Discuss the present state of personnel function in organizational context with special reference to the strategy, structure and systems of HR. 14 Marks

(OR)

6 Compare the assumptions of Mc. Gregor's theory X and theory Y about employees. 14 Marks

UNIT-IV

7 The utility data for a project is given below. The project is to be completed in 25 weeks. Do the necessary crashing and find increase in cost. 14 Marks

Activity	Normal		Crash	
	(Weeks)	Cost (Rs.)	(Weeks)	Cost (Rs.)
1-2	4	600	2	800
1-3	2	500	1	900
2-4	6	1,000	3	1,750
3-6	10	2,500	5	3,500
4-5	5	1,300	5	1,300
5-6	8	2,000	6	2,100
5-7	8	1,600	5	1,780
6-7	7	2,000	7	2,000

(OR)

8 a) Define entrepreneur. How they are helpful to the society? 7 Marks

b) Tasks A, B, C….,H, I constitute a project. The notation X < Y means that the task X must be finished before can begin. With this notation, the precedence relationships are 7 Marks

A < D,E; B,D < F; C < G; B < H; F,G < I.

Draw a network to represent the project and find the minimum time of completion of the project when time, in days, of each task is as follows:

Task:	A	B	C	D	E	F	G	H	I
Time:	23	8	29	16	24	18	19	4	10

Also identify the critical path.

UNIT-V

9 Write briefly understanding importance of 14 Marks

i) Intellectual Property Rights (IPR).

ii) Total Quality Management.

(OR)

10 Explain value analysis and role of information technology in managerial decision making. 14 Marks

CODE No.:14BT6HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

BANKING AND INSURANCE

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Explain the role of Reserve Bank of India in banking system.	14 Marks
	(OR)	
2	Describe about open market operations in banking system.	14 Marks

UNIT-II

3	Explain the role of a banker income account of lunatics and insolvents.	14 Marks
	(OR)	
4	What do you know about anti money laundering?	14 Marks

UNIT-III

5	Describe the features and types of e-payment system.	14 Marks
	(OR)	
6	Write a detailed note about a business models.	14 Marks

UNIT-IV

7	Write about the importance and elements of insurance.	14 Marks
	(OR)	
8	Explain the concepts of risk and risk *vs* uncertainty.	14 Marks

UNIT-V

9	Write a short note on:	
	i) Licensing of insurance companies.	5 Marks
	ii) Elements of insurance contracts.	5 Marks
	iii) Maxims applicable to insurance contract.	4 Marks
	(OR)	
10	Compare and contrast the principles and functions of LIC and GIC.	14 Marks

CODE No.:14BT6HS03 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

ENTERPRENEURSHIP FOR MICRO SMALL AND MEDIUM ENTERPRISES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	What are the characteristic features of an entrepreneur? Discuss.	14 Marks
	(OR)	
2	"Success in entrepreneurship depends on certain coherent qualities". Comment.	14 Marks

UNIT-II

3	Explain briefly the seven sources for innovation opportunity.	14 Marks
	(OR)	
4	What is project formulation? Explain the various elements of project formulation.	14 Marks

UNIT-III

5	Evaluate the importance of small enterprises.	14 Marks
	(OR)	
6	Comment on the impact of micro enterprises.	14 Marks

UNIT-IV

7	Critically examine the role of commercial banks in providing finance to the small and medium enterprises.	14 Marks
	(OR)	
8	What are the reasons for sickness of small scale enterprises? What kind of institutional support is available for strengthening them?	14 Marks

UNIT-V

9	What are the problems of women Entrepreneurs in India? Discuss.	14 Marks
	(OR)	
10	Discuss the growth of women Entrepreneurship in India.	14 Marks

CODE No.:14BT40501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

COMPUTER ORGANIZATION

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain how the floating-point numbers are represented and used in digital arithmetic operations. Give examples.	8 Marks
	b)	Draw and explain the hardware for signed magnitude addition and subtraction.	6 Marks
		(OR)	
2	a)	Draw and explain the bus system for four registers.	7 Marks
	b)	Give a brief note on logic micro operations and shift micro operations.	7 Marks

UNIT-II

3	a)	Discuss about Wilke's micro programmed model with flow chart.	7 Marks
	b)	Discuss about the design issues of instructions and its elements in detail.	7 Marks
		(OR)	
4	a)	The memory unit of a computer has 256 words of 32 bits each. The computer has an instruction format with five fields an operation code field, a mode field to specify on of seven addressing modes, register address field to specify one of 64 processor registers and 2 memory address fields. Design an instruction format and the number of bits in each field if the instruction is in one memory word for the above said specifications.	7 Marks
	b)	Write about Hardwired control unit in detail.	7 Marks

UNIT-III

5	a)	Distinguish between vectored interrupts and non-vectored interrupts.	7 Marks
	b)	Discuss in detail about Direct Memory Access (DMA).	7 Marks
		(OR)	
6	a)	A 128KB block of data is read from a disk device. What is the overall data transmission rate if the disk drive has a latency of 4ms and a burst bandwidth of 16MB per second?	7 Marks
	b)	Write about peripheral Component interconnect (PCI) bus.	7 Marks

UNIT-IV

7	a)	Give a neat sketch that illustrates the components in a typical memory hierarchy.	6 Marks
	b)	How many lines of the address bus must be used to access 2048 bytes of memory? How many of these lines will be common to all chips?	8 Marks
		(OR)	
8	a)	The access time of a cache memory is 100ns and that of main memory is 1000ns. It is estimated that 80% of the memory requests are for read and the remaining 20% are for write. The hit ratio for read accesses only is 0.9. A write-through procedure is used. i) What is the average access time of the system considering only memory read cycles? ii) What is the average access time of the system for both read and write requests?	8 Marks

b) Write short notes on semiconductor RAM memories. 6 Marks

UNIT-V

9 Distinguish between the following: 14 Marks
i) Pipelining and super scalar operations.
ii) Multiprocessors and multi-computers.

(OR)

10 a) A non pipeline system takes 50ns to process a task. The same task can be processed in a 6 segment pipeline with a clock cycle of 10ns. Determine the speed up ratio of the pipeline for 100 tasks. What is the maximum speed up that can be achieved? 8 Marks

b) With a neat diagram, explain the pipeline for floating-point addition and subtraction. 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

DESIGN AND ANALYSIS OF ALGORITHMS

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail the importance of Priori analysis and Posterior analysis with an appropriate example.	7 Marks
	b)	Write an algorithm to evaluate a polynomial equation at some point **x** and find its complexity.	7 Marks
		(OR)	
2		Explain about disjoint set operations with appropriate examples.	14 Marks

UNIT-II

3	a)	Explain the Stassen's matrix multiplication in detail.	7 Marks
	b)	Write detection algorithm of the binary search tree.	7 Marks
		(OR)	
4		Write and explain the control abstraction for divide and conquer and also explain the calculation of its time complexity.	14 Marks

UNIT-III

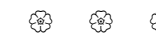
5		Consider n = 4 and (q1, q2, q3, q4) = (do, if, int, while) and the values for p's and q's are give as p(1:4) = (3, 3, 1, 1) and q(0:4)=(2, 3, 1, 1, 1). Construct the optimal binary search tree.	14 Marks
		(OR)	
6		Write and explain the general method of Greedy technique in detail.	14 Marks

UNIT-IV

7		Write an algorithm for 4-Queens problem using backtracking method and draw the portion of the state space tree generated by algorithm.	14 Marks
		(OR)	
8	a)	Write the control abstraction for least cost search method.	7 Marks
	b)	Explain how LC branch and bound technique can search the solution space for **0/1** Knapsack problem and the portion of the state space tree.	7 Marks

UNIT-V

9	a)	Explain the classes of P and NP.	7 Marks
	b)	Explain the satisfiability problem and write the algorithm for the same.	7 Marks
		(OR)	
10	a)	Write a Non-deterministic algorithm for sorting.	7 Marks
	b)	Write a Non-deterministic algorithm to solve Knapsack problem.	7 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

OBJECT ORIENTED PROGRAMMING

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define constructor and explain rules for writing constructors and types of constructors with an example.	7 Marks
	b)	Explain method overloading in JAVA. Write a JAVA program to overload print method to print different data type values.	7 Marks
		(OR)	
2	a)	Explain type conversation and type casting with examples.	7 Marks
	b)	Write a JAVA program to read six subject marks of a student and find the total and average of marks using arrays.	7 Marks

UNIT-II

3	a)	Explain hierarchical inheritance in JAVA with example.	7 Marks
	b)	Explain extending interfaces with example program.	7 Marks
		(OR)	
4		Explain creating, accessing and importing a user defined package with an example.	14 Marks

UNIT-III

5		Explain the life cycle of thread with a neat diagram.	14 Marks
		(OR)	
6		Specify the benefits of exception handling in JAVA. Write a JAVA program to represent at least five exception handling concept.	14 Marks

UNIT-IV

7		Write an applet called **LetterBox.java** that uses border layout for the applet and grid layout for the center portion of that applet. Put buttons in the outer border cells with labels and colors (red, green, blue, yellow). In the center, put buttons with the 26 letters of the alphabet in caps. Use 5 rows of 5 letters plus 1 extra row with 1 letter. Use **setFont** to change the letters to bold, 14 point. The background of the buttons should be red initially and the foreground should be white. Use two subclasses of Button for the buttons.	14 Marks
		(OR)	
8		Write an applet that shows two squares. The user should be able to drag either square with the mouse. (You'll need an instance variable to remember which square the user is dragging.) The user can drag the square off the applet if she wants; if she does this, it's gone. You can try it here:	14 Marks

UNIT-V

9		Write a program to connect to a database and display all the data available in the database.	14 Marks
		(OR)	
10		Explain the life cycle of a servlet with a neat sketch.	14 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

COMPUTER NETWORKS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define computer networks. What are the applications of computer networks?	6 Marks
	b)	Explain different kinds of Network Topologies.	8 Marks
		(OR)	
2	a)	Explain the Frame format and functionality of 802.11 standard protocols.	7 Marks
	b)	What is unguided transmission media? Explain with examples.	7 Marks

UNIT-II

3	With the help of an example, explain how different types of error correcting codes are used to correct errors.	14 Marks
	(OR)	
4	Explain simplex stop and wait protocol for a noisy channel.	14 Marks

UNIT-III

5	With the help of a neat sketch, explain hierarchical routing.	14 Marks
	(OR)	
6	What is congestion? Explain any one algorithm used to control congestion.	14 Marks

UNIT-IV

7	What is connection establishment? How Transport layer establish a connection with Three-way Hand Shake mechanism? Explain in detail.	14 Marks
	(OR)	
8 a)	Explain each field in UDP Header format with a neat diagram.	7 Marks
b)	Write short note on Real Time Transport Protocol.	7 Marks

UNIT-V

9	Explain Transmission Control Protocol.	14 Marks
	(OR)	
10	Write a short notes on: i) SMTP. ii) WWW.	14 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2018

COMPUTER NETWORKS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the advantages of computer networks?	6 Marks
	b)	Explain the functionality of each layer in ISO-OSI reference model with a neat diagram.	8 Marks
		(OR)	
2	a)	Explain the architecture of Internet in detail.	7 Marks
	b)	Write short notes on fiber optic cables.	7 Marks

UNIT-II

3	a)	Calculate the remainder obtained by dividing $\mathbf{x^7 + x^5 + 1}$ by the generator polynomial $\mathbf{x^3 + 1}$.	7 Marks
	b)	Compare the performance of Pure and Slotted ALOHA at medium and high load.	7 Marks
		(OR)	
4	a)	A 12-bit Hamming code whose hexadecimal value is **0xE4F** arrives at a receiver. What was the original value in hexadecimal? Assume that not more than 1- bit is in error.	7 Marks
	b)	Analyse the performance of sliding window protocols using go-back-n and selective repeat with the help of an example.	7 Marks

UNIT-III

5		With the help of a neat sketch, explain hierarchical routing.	14 Marks
		(OR)	
6		What is congestion? Explain any one algorithm used to control congestion.	14 Marks

UNIT-IV

7	a)	Differentiate Connection oriented and Connection less services.	7 Marks
	b)	Explain the flow control mechanism provided by transport layer.	7 Marks
		(OR)	
8	a)	Write short note on timer management.	6 Marks
	b)	How the transport layer avoid congestion during transmission of data?	8 Marks

UNIT-V

9		Explain Transmission Control Protocol.	14 Marks
		(OR)	
10		Write a short notes on: i) SMTP. ii) WWW.	14 Marks

CODE No.:14BT60101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

REINFORCED CEMENT CONCRETE STRUCTURES – II

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 A stair case room measures 5.5m x 3.2m and the height between the floors is 3.2m. Design a suitable dog legged stair case with middle landing slab. Use M20 and Fe415 grades. Assume live load for residential building. Draw a neat sketch showing reinforcement details. 14 Marks

(OR)

2 Design a suitable dog legged stair in a public building, to be located in a staircase 6m long, 3.2m wide and 3.7m high, with a door of 1.1m wide in each of the longitudinal walls. The doors face each other and are located with their centres at a distance of 0.9m from the respective corners of the staircase. Use M20 mix and Fe415 steel. 14 Marks

UNIT-II

3 Two interior columns A and B carry 800kN and 1000kN loads respectively. Column A is 350mm x 350mm and column B is 400mm x 400mm in section. The centre to centre spacing between columns is 4.8m. The soil on which the footing rests is capable of providing resistance of 150kN/m^2. Design a combined footing by providing a central beam joining the two columns. Use M25 grade concrete and Fe415 steel reinforcement. 14 Marks

(OR)

4 A column 600mm x 600mm carries an axial load of 1200kN and is supported on three piles. The piles are driven to hard strata available at the depth of 10m. Use M20 concrete and Fe415 steel. Design the pile. 14 Marks

UNIT-III

5 Design a T-shaped retaining wall for a height of 5.50m above the ground level. It retains earth which weighs 16kN/m^3 and has an angle of repose of 30°. Maximum pressure on the ground is limited to 120kN/m^2. Use M20 concrete and Fe415 grade steel. 14 Marks

(OR)

6 Design the stem of cantilever retaining wall to retain earth 4.5m above ground level. The surcharge on the earth fill is 15kN/m^2. The Angle of repose of soil is 30°. Unit weight of soil is 16kN/m^3. Coefficient of friction between soil and concrete is 0.6 and the safe bearing capacity of soil is 150kN/m^2. Use M20 concrete and Fe500 steel. 14 Marks

UNIT-IV

7 Design a circular water tank of capacity 400m^3 (400,000 litres) resting on the ground and having a fixed base condition due to a rigid joint between the wall and the base slab. The materials to be used are M25 grade concrete and HYSD steel of grade Fe415. Use the method recommended in IS: 3370 (Part IV). 14 Marks

(OR)

8	Design a rectangular tank resting on ground for a capacity of 80 kilo litres. Use M25 concrete and Fe415 steel. Assume height of tank as 4m with a free board of 0.30m.	14 Marks

UNIT-V

9	Design a circular silo of 10m height and 8m internal diameter to store cement of unit weight 15.5kN/m³ and $\Phi = 25°$.	14 Marks

(OR)

10	Describe in detail the design steps for the design of chimney.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

FOUNDATION ENGINEERING

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the field vane shear test.	8 Marks
	b)	The measured SPT value in a deposit of fully submerged fine silty sand was 45 at a depth of 7m. The saturated unit weight of soil is 19 kN/m^3. Find the correct Standard Penetration Test value.	6 Marks
		(OR)	
2	a)	Discuss the different types of samplers.	6 Marks
	b)	Explain the various boring methods used in soil investigation.	8 Marks

UNIT-II

3	a)	Explain clearly Rebhann's graphical construction method to evaluate the earth pressure on a retaining wall.	6 Marks
	b)	Determine the active and passive earth pressure given the following data: Height of retaining wall = 10m; $\varphi = 25°$; γ_d = 17 kN/m^3. Ground water table is at the top of the retaining wall.	8 Marks
		(OR)	
4	a)	What are the advantages and disadvantages of Culmann's graphical method as compared to Rebhann's graphical method?	6 Marks
	b)	A gravity retaining wall retains 14m of a backfill, γ = 17.7 kN/m^3, $\varphi = 25°$ with a uniform horizontal surface. Assume the wall interface to be vertical, determine the magnitude and point of application of the total active pressure. If the water table is a height of 6m, how far do the magnitude and the point of application of active pressure changed?	8 Marks

UNIT-III

5	a)	Write brief critical notes on 'Taylor's Stability Number'.	7 Marks
	b)	A 40-degree clay slope has a height of 5m. Assuming a toe circle failure starting 1m from the edge of the slope (at the top), calculate the shear strength required for the soil for a factor of safety of 1.5. Asume γ = 19.6 kN/m^3. Also since the existence of the hard layer is not mentioned, take Taylor's *N* as 0.1817.	7 Marks
		(OR)	
6	a)	Give the step by step procedure for analysing the stability of the upstream slope of an earth dam by the Swedish method of slices. Bring out the effect of sudden drawdown on the stability of the slope.	6 Marks
	b)	What is the maximum depth to which a trench of vertical sides can be excavated in a clay stratum with $\boldsymbol{c}$ = 50kN/m^2 and $\boldsymbol{\gamma}$ = 16kN/m^3? Assume the clay to be saturated. Surface along the centre line of slice. The bottom of the slice is inclined at 30° to horizontal. Calculate the safety factor against sliding using effective stress analysis.	8 Marks

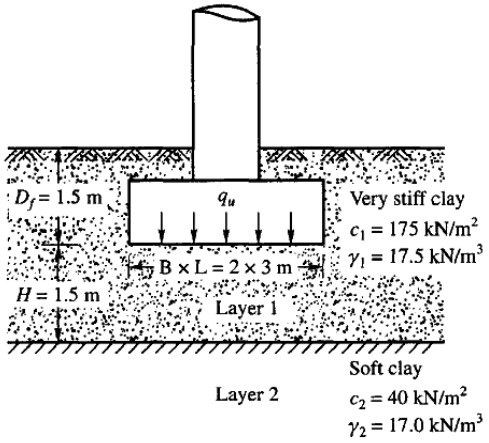
UNIT-IV

7 A rectangular footing of size 3m x 2m is founded at a depth of 1.5m in a clay stratum of very stiff consistency. A clay layer of medium consistency is located at a depth of 1.5m (= *H)* below the bottom of the footing (Fig.). The soil parameters of the two clay layers are as follows: 14 Marks

Top clay layer: c = 175 kN/m^2; γ = 17.5 kN/m^3.

Bottom layer: c = 40 kN/m^2; γ = 17.0 kN/m^3.

Estimate the ultimate bearing capacity and the allowable bearing pressure on the footing with a factor of safety of 3.



(OR)

8 a) How would you fix the depth of the foundation? Discuss the Rankine's formula for the minimum depth. 6 Marks

b) Using Skemption theory, compute the ultimate bearing capacity of a square footing of 1.5m x 1.5m, resting on the saturated clay at undrained condition at a depth of 2.0m from the ground level. Depth correction factor, $d_c = 1 + 0.2D/B$, shape correction factor, $s_c = 1 + 0.2\ B/L$, where D, B and L are the depth of foundation, width and length of the footing respectively. 8 Marks

UNIT-V

9 a) Explain the basic difference in the bearing capacity computation of shallow and deep foundations. 6 Marks

b) A group of 9 piles with 3 piles in a row was driven into a soft clay extending from ground level to a great depth. The diameter and the length of the piles were 30cm and 10m respectively. The unconfined compressive strength of the clay is 70kPa. If the piles were placed 90cm center to center, compute the allowable load on the pile group on the basis of a shear failure criterion for a factor of safety of 2.5. 8 Marks

(OR)

10 a) Sketch a completed well foundation for a Bridge pier. Indicate the various components and their functions. 7 Marks

b) How do you analyze the well for its lateral stability? 7 Marks

CODE No.:14BT60103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

TRANSPORTATION ENGINEERING - I

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the factors affecting highway alignment and explain the different surveys that are to be conducted for highway projects?	7 Marks
	b)	Derive an expression for stopping sight distance. Calculate the stopping sight distance on a highway at a descending gradient of 2% for a design speed of 80kmph. Assume other data as per IRC recommendations.	7 Marks

(OR)

2	a)	Derive an expression for transition curves. Design the length of transition curve for a national highway of radius 500m, design speed V=80kmph, width of the pavement W = 7m and assume suitable data.	7 Marks
	b)	Derive an expression for vertical summit curves. Derive the length of summit curve to provide a stopping sight distance for a design speed of 80kmph for an intersection formed of two gradients, +3.0 and -5.0 percent. Assume other data.	7 Marks

UNIT-II

3	a)	Explain the procedure of design of subsurface drainage system.	7 Marks
	b)	The maximum quantity of water expected in one of the open longitudinal drains on clayey soil is $0.9m^3$/sec. Design the cross section and longitudinal slope of trapezoidal drain assuming the bottom width of the trapezoidal section to be 1.0m and cross slope to be 1.0 vertical to 1.5 horizontal. The allowable velocity of flow in the drain is 1.2m/sec and Manning's roughness coefficient is 0.02.	7 Marks

(OR)

4		Explain Marshall method of Bituminous Mix Design.	14 Marks

UNIT-III

5	a)	What are the different types of pavement and differentiate between flexible and rigid pavements?	7 Marks
	b)	Calculate the stresses at interior, edge and corner regions of a cement concrete pavement using Westergaard's stress equation. Use the following data: Wheel load, P = 5100kg Modulus of elasticity of cement concrete, E = 3.0×10^5 kg/cm^2 Pavement thickness, h = 18 cm Poisson's ratio of concrete, μ = 0.15 Modulus of sub grade reaction ,K = 6.0 kg/cm^3 Radius of contact area, a =15cm	7 Marks

(OR)

6		What are the factors affecting pavement rigid pavement design? Elaborate IRC recommended procedure for design of rigid pavements?	14 Marks

UNIT-IV

7 a) What are the materials used in Cement Concrete roads? Write the construction procedure of CC pavements. 7 Marks

b) Write a brief note on PCC pavements. 7 Marks

(OR)

8 Write in detail with the help of neat sketches: 14 Marks

i) Compacting equipment of Asphalt Pavement.

ii) Air compressors.

UNIT-V

9 a) Explain the causes, effects and adjustment of creep.? Write short notes on the following: 7 Marks

i) Summit Curves and Valley Curves. ii) Cant deficiency.

iii) Points and Crossings. iv) Coning of wheels.

b) Discuss the theories related to creep. What are the function of various components like: 7 Marks

i) rails. ii) sleepers. iii) ballast.

(OR)

10 a) Elaborate factors affecting selection of site for Airport. 7 Marks

b) What are the different types of horizontal and vertical curves? Derive the relation between radius and versine of the curve. 7 Marks

CODE No.:14BT60104 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

WASTEWATER TECHNOLOGY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the terms: i) Sewage. ii) Garbage.	6 Marks
	b)	Differentiate between water carriage system and conservancy system.	8 Marks
		(OR)	
2	a)	What is meant by partially separate system of sewerage? Why it is considered most suitable for Indian conditions?	7 Marks
	b)	Differentiate between separate system and combined system of sewerage.	7 Marks

UNIT-II

3	a)	A combined sewer of a circular section is to be laid to serve a particular area. Calculate the size of this sewer from the following data. i) Area to be served = 100 hectares. ii) Population =1,00,000. iii) Maximum permissible flow velocity = 3m/sec. iv) Time of entry for storm water =10 minutes. v) Time of flow in channel = 20 minutes. vi) Percapita water supply= 250 litres/day/person. vii) Co-efficient of run-off for the area = 0.45. viii) Hourly, maximum rainfall for the area at the design frequency = 5cm. Assume suitable data not given and if required.	9 Marks
	b)	What are the various types of sewer appurtenance? Explain the principle involved in the removal of oil and grease from grease and oil traps.	5 Marks
		(OR)	
4	a)	Explain “one pipe” and “single stack” system of plumbing for buildings with a neat sketch and state their merits and demerits.	7 Marks
	b)	What is the importance of determination of solids in sewage? Explain how suspended and dissolved solids of sewage can be determined.	7 Marks

UNIT-III

5	a)	Draw the flow diagram of sewage treatment plant. Explain the function of each unit.	5 Marks
	b)	Design a grit chamber for a maximum waste water flow of 10 MLD, to remove particles up to 0.2mm diameter having specific gravity 2.65. The settling velocity of these particles is found to range from 0.018 to 0.022m/s. Maintain a constant flow through velocity of 0.3m/sec through the provision of a proportional flow weir.	9 Marks
		(OR)	
6	a)	Explain about screening process involved in the waste water treatment plant.	7 Marks
	b)	Differentiate between continuous and intermittent flow type settling tanks.	7 Marks

UNIT-IV

7 a) Explain the process of activated sludge process. 7 Marks

b) Design a conventional activated sludge plant to treat settled domestic sewage with diffused air aeration system, with the following data. 7 Marks

i) Population = 2,00,000.
ii) Per capita flow = 150 lpcd.
iii) Settled sewage BOD5 = 225mg/l.
iv) Average flow = 20 mLd.
v) Effluent BOD5 required=10mg/l.

(OR)

8 a) Explain the construction and working of aerated lagoon. 7 Marks

b) Explain in brief the construction, location and working of an oxidation pond. 7 Marks

UNIT-V

9 What is meant by sludge thickening? What are the various methods of sludge thickening? Explain with a neat sketch. 14 Marks

(OR)

10 a) Explain the method of adsorption by activated carbon for the removal of refractory organic materials from sewage. 7 Marks

b) Explain the various advantages and disadvantages of septic tank disposal system. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

GROUND WATER DEVELOPMENT AND MANAGEMENT

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	With the help of a neat sketch, explain the vertical distribution of ground water.	7 Marks
	b)	What is an aquifer? Explain the different types of aquifers.	7 Marks
		(OR)	
2	a)	What are the various aquifer parameters? Explain the aquifer parameters.	7 Marks
	b)	An artesian aquifer 20m thick has a porosity of 20% and bulk modulus of compression 10^8 N/m^2. Estimate the storage coefficient of the aquifer.	7 Marks

UNIT-II

3	a)	Derive an expression for the steady state discharge of a well in an unconfined aquifer.	7 Marks
	b)	In an artesian aquifer of 8m thickness, a 10cm diameter well is pumped at a constant rate of 100 lit/minute. The steady state draw downs observed in two wells located at 10m and 50m distances from the centre of the well are 3m and 0.05m respectively. Compute the transmissivity and the hydraulic conductivity of the aquifer.	7 Marks
		(OR)	
4	a)	Describe the Theis method of determining the aquifer parameters using the pumping test data.	7 Marks
	b)	Explain unsteady radial flow in a leaky aquifer with a neat sketch.	7 Marks

UNIT-III

5		Describe the occurrence of saline water intrusion. How do you locate fresh water - sea water interface? Explain with neat sketches.	14 Marks
		(OR)	
6		Describe practical methods to halt and abate sea water intrusion in coastal regions. Also explain Ghyben-Herzberg relation.	14 Marks

UNIT-IV

7	a)	What is artificial recharge of groundwater? Explain the purposes served by artificial recharge.	7 Marks
	b)	Explain the basin method of artificial recharge with a neat sketch.	7 Marks
		(OR)	
8	a)	Discuss the applications of GIS and Remote Sensing in artificial recharge.	7 Marks
	b)	Explain the concept of conjunctive use. What are its advantages and disadvantages?	7 Marks

UNIT-V

9	a)	Describe Electrical Resistivity method with a neat sketch.	7 Marks
	b)	Explain the Geophysical logging and Resistivity logging by bringing out the difference between them.	7 Marks
		(OR)	
10	a)	What is seismic refraction method? What are the two methods of determining the thickness of layers? Where is this method used?	7 Marks

b) Describe magnetic and induced polarization techniques. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

SOLID WASTE MANAGEMENT

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Mention the various methods commonly used for the management of solid waste. Describe one of them in detail.	14 Marks
		(OR)	
2	a)	Explain the how Social and Economic aspects govern the quantity and quality of solid waste.	7 Marks
	b)	Write details about physical and chemical characteristics of solid waste.	7 Marks

UNIT-II

3		Explain the typical SWM system and its functional elements with neat sketch.	14 Marks
		(OR)	
4		Write in detail about On-site segregation of solid wastes.	14 Marks

UNIT-III

5	a)	Explain different tools used to store and collect house refuse.	7 Marks
	b)	What are different vehicles adopted to transport solid waste by municipal corporation?	7 Marks
		(OR)	
6	a)	Differentiate between wet waste and dry waste.	7 Marks
	b)	What are the various methods considered to select the collection route of vehicle to collect municipal solid waste?	7 Marks

UNIT-IV

7	a)	Explain the various equipment used in processing technique.	7 Marks
	b)	Write about the resource recovery of solid waste.	7 Marks
		(OR)	
8	a)	Describe how a composting works.	7 Marks
	b)	Discuss the various types of incinerator.	7 Marks

UNIT-V

9	a)	Define pulverization, composting and incineration.	7 Marks
	b)	With sketch, explain the procedure incineration.	7 Marks
		(OR)	
10		What is land fill? Explain different types of landfills.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

MICROPROCESSORS AND MICROCONTROLLERS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	With a neat block diagram, explain the architecture of 8086 microprocessor.	7 Marks
	b)	Write an assembly language program for 8086 microprocessor to reverse a given string: "Microprocessors for IT".	7 Marks
		(OR)	
2	a)	Explain different addressing modes of 8086 microprocessor with suitable examples.	8 Marks
	b)	Explain the following string manipulation instructions of 8086 with suitable examples. i) MOVS ii) LODS iii) CMPS	6 Marks

UNIT-II

3	a)	Draw and discuss interrupt structure of 8086 in detail.	7 Marks
	b)	Draw and discuss a typical maximum mode 8086 system.	7 Marks
		(OR)	
4	a)	Interface two 4K x 8 EPROMS and two 4K x 8 RAM chips with 8086. Select suitable maps.	7 Marks
	b)	Draw and discuss the internal architecture of 8259A.	7 Marks

UNIT-III

5	a)	Explain the format of mode and command register formats of 8251.	10 Marks
	b)	Frame the control word of 8255 PPI for port A in mode 1 as input port, port B in mode l as output port and leave the pins of port C unused.	4 Marks
		(OR)	
6	a)	Explain the architecture of 8255 with neat diagram and also give the format of BSR control word.	9 Marks
	b)	What is meant by serial communication and also explain the following MODEM control lines: i) DSR ii) DTR iii) RTS iv) CTS.	5 Marks

UNIT-IV

7	a)	Write an 8051 assembly language program to perform the following arithmetic operation $\frac{ab+ac}{d}$, where a, b, c and d are 8 bit binary numbers. Explain with algorithm and flow chart.	7 Marks
	b)	Write an 8051 assembly language program to find the number of odd and even numbers in an array of N numbers.	7 Marks
		(OR)	
8	a)	Explain briefly the arithmetic and logical instructions of Intel 8051.	7 Marks
	b)	Explain the interfacing between 8051 and an external memory with suitable	7 Marks

diagrams.

UNIT-V

9 a) Assume that XTAL = 20MHz, write an assembly language program for 8051 microcontroller to generate a 0.10 second time delay. Use timer 0 in mode 1 to generate time delay. 7 Marks

b) Assuming that pin 3.3 (INT1) is connected to a pulse generator; write a program for 8051 microcontroller, in which the falling edge of the pulse will send a high to P1.3, which is connected to an LED. 7 Marks

(OR)

10 a) Write a single assembly language program to do the following by using interrupts: 7 Marks

i) generate a square wave with a frequency of 10kHz.
ii) the frequency of the square wave should change to 1kHz when INT0 is activated.
iii) the frequency of the square wave should change to 5kHz when INT1 is activated.

Use timer1 interrupt in mode 2.

b) Discuss in detail about SCON and PCON special function register of 8051 microcontroller. 7 Marks

CODE No.:14BT60202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

POWER ELECTRONICS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw the V-I characteristics of a thyristor and explain different operating regions. What is the effect of gate current on the V-I characteristics of a thyristor?	7 Marks
	b)	Compare SCR with IGBT.	7 Marks
		(OR)	
2	a)	What is commutation? What are the types of commutation? Explain any one commutation circuit with a diagram and waveforms.	7 Marks
	b)	With a neat schematic diagram, explain the UJT firing circuit.	7 Marks

UNIT-II

3	a)	Compare the performance of single phase fully controlled bridge converter feeding RL load without freewheeling diode and single phase semi converter.	7 Marks
	b)	State the advantages of using freewheeling diode in phase controlled converters.	7 Marks
		(OR)	
4		A three phase full converter bridge is connected to supply voltage of 230V per phase and a frequency of 50Hz. The source inductance is 4mH. The load current on DC side is constant at 20A. If the load consists of a DC voltage source of 400V having an internal resistance of 1Ω, calculate firing angle delay and overlap angle.	14 Marks

UNIT-III

5		Describe the operation of single phase full wave AC voltage controller with the help of voltage and current waveform. Also derive the expression for average value of output voltage.	14 Marks
		(OR)	
6		Explain the principle of working of single phase to single phase step up Cycloconverter with waveforms. List the factors that affect the performance of Cycloconverter.	14 Marks

UNIT-IV

7	a)	Explain the operation of four quadrant chopper with neat circuit diagram.	7 Marks
	b)	A step-up chopper has input voltage of 220V and output voltage of 660V. If the non-conducting time of thyristor-chopper is 100μs, compute the pulse width of output voltage. In case pulse width is halved for constant frequency operation, find the new output voltage.	7 Marks
		(OR)	
8		Explain various control strategies of choppers.	14 Marks

UNIT-V

9		Describe the working of a single phase full bridge inverter with relevant circuit and waveforms.	14 Marks
		(OR)	
10		Explain sinusoidal pulse modulation used for PWM inverters. Write the important features of the same.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

SWITCHGEAR AND PROTECTION

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly explain the representation of a three phase star connected neutral grounded synchronous generator in the positive, negative and zero sequence networks.	7 Marks
	b)	Briefly describe the effects of different faults on power systems.	7 Marks
		(OR)	
2		The line-to-line voltages in an unbalanced three-phase supply are $V_{ab} = 1000\angle 0^0$, $V_{bc} = 866.25\angle -150^0$ and $V_{ca} = 500\angle 120^0$. Determine the symmetrical components for line and phase voltages then find the phase voltages V_{an}, V_{bn}, and V_{cn}.	14 Marks

UNIT-II

3	a)	Derive an expression for torque produced by an induction relay.	7 Marks
	b)	How do different distance relays perform with respect to their behavior on load, effect of arc resistance on the reach and response to power swing?	7 Marks
		(OR)	
4	a)	Discuss how an amplitude converter can be converted into a phase comparator and vice-versa.	7 Marks
	b)	Discuss the realization of an inverse over current relay using a microprocessor.	7 Marks

UNIT-III

5	a)	What is restricted earth fault protection for alternators? Why is this form of protection used for alternators even though it does not provide protection for the complete winding?	7 Marks
	b)	An 11kV, 100MVA generator is grounded through a resistance of 6Ω. The current transformers have a ratio 1000/5. The relay is set to operate when there is an out of balance current of 1A. What percentage of the generator winding will be protected by the percentage differential scheme of protection?	7 Marks
		(OR)	
6	a)	Discuss the working principle of a Buchholz relay. For what type of faults it is employed? Explain.	7 Marks
	b)	Describe with a neat diagram, a circulating current protection scheme for a 3-phase, 1MVA, 11kV/400 volts delta-star transformer. If the current transformers have a nominal secondary current of 5 amps, calculate their ratios.	7 Marks

UNIT-IV

7	a)	Explain the principle of distance relaying applied to protection of radial transmission lines.	7 Marks
	b)	Explain carrier current protection scheme for transmission lines.	7 Marks
		(OR)	
8	a)	Briefly describe about protection against lightning over voltages.	7 Marks
	b)	Briefly discuss on metal oxide surge diverter.	7 Marks

UNIT-V

9 a) Discuss briefly about various types of fuses and their application in protecting power systems. 7 Marks

b) Explain briefly about the arc initiation and extinction process in a circuit breaker. 7 Marks

(OR)

10 a) Discuss the operating principle of SF_6 circuit breaker. What are its advantages over other types of circuit breakers? For what voltage range it is recommended? 7 Marks

b) A circuit breaker interrupts the magnetizing current of a 100MVA transformer at 220kV. The magnetizing current of the transformer is 5% of the full load current. Determine the maximum voltage which may appear across the gap of the breaker when the magnetizing current is interrupted at 53% of its peak value. The stray capacitance is 2500μF. The inductance is 30H. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

DISTRIBUTION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain different types of loads with their characteristics.	7 Marks
	b)	What are the differences between the radial and loop type distribution feeders?	7 Marks
		(OR)	
2	a)	Explain the terms coincidence factor and utilization factor with examples.	8 Marks
	b)	Define feeder, distributor and service mains. Also show them with simple pictorial representation.	6 Marks

UNIT-II

3	a)	Explain the design consideration of radial type distribution feeder.	7 Marks
	b)	Discuss the factors affecting the design loading of a feeder.	7 Marks
		(OR)	
4		Discuss in detail about high voltage distribution systems with the help of neat schematic diagrams.	14 Marks

UNIT-III

5	a)	How do you optimally locate the substations and explain the benefits derived from optimal location.	8 Marks
	b)	List out the design and operational aspects that affect the primary feeder voltage level.	6 Marks
		(OR)	
6	a)	Derive the expression for percentages voltage drop of the substation service area with 'n' primary feeders.	8 Marks
	b)	Enumerate the various factors to be considered for ideal location of substation.	6 Marks

UNIT-IV

7	a)	What are the objectives of distribution protection?	7 Marks
	b)	A single phase 3-wire distributed line 120-0-120 V, feeds a load of 10KV line to line and 3KVA on each line to ground. The transformer is 7620V/240V, 25KVA with 7% impedance. The line impedance is j0.08 Ω per wire. Calculate the fault current and fault MVA for the following case: i) L-L fault, 1.5 km from transformer. ii) L-G fault, 1.5 km from transformer.	7 Marks
		(OR)	
8	a)	Write short notes on circuit reclosures and line sectionalizers.	7 Marks
	b)	Discuss about radial networks in distribution systems.	7 Marks

UNIT-V

9	a)	How an AVR can control voltage? With the aid of suitable diagram, explain its function.	7 Marks
	b)	Briefly explain about line drop compensation.	7 Marks
		(OR)	
10		Write short notes on: i) Capacitor effect in the voltage control in the distribution system.	7 Marks

ii) AVR in the distribution feeder with neat diagram. 7 Marks

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CODE No.:14BT60206 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2018

ADVANCED CONTROL SYSTEMS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	The controlled plant of a unity feedback system is $G(s) = \frac{k}{s(s+5)}$. It is specified that velocity error constant of the system be equal to 15, while the damping ratio is 0.6. Design a suitable lag compensator to meet the specifications.	CO3	9 Marks
	b)	Consider a unity feedback system with open loop transfer function $G(s) = \frac{10}{s(s+1)(s+2)}$. Design a PI controller so that the closed loop has damping ratio of 0.707 and natural frequency of oscillation as 1.2rad/sec.	CO1	5 Marks
		(OR)		
2	a)	Explain two degrees of freedom control in brief.	CO1	6 Marks
	b)	Consider a unity feedback system with open loop transfer function $G(s) = \frac{20}{s(s+2)(s+4)}$. Design a PD controller so that the closed loop has a damping ratio of 0.8 and natural frequency of oscillation as 2rad/sec.	CO3	8 Marks

UNIT-II

3	a)	Discuss the describing function analysis of non linear systems.	CO2	5 Marks
	b)	Derive the describing function of saturation.	CO2	9 Marks
		(OR)		
4	a)	Explain in detail the various steps involved in construction of phase trajectory by Delta method.	CO4	8 Marks
	b)	Explain the classification of singular points with respective phase portraits.	CO1	6 Marks

UNIT-III

5	a)	Explain Lyapunov's stability and instability theorems.	CO2	7 Marks
	b)	Consider the non linear system described by the following equations. $\dot{x}_1 = -x_1 - x_2^2$ $\dot{x}_2 = -x_2$ Investigate the stability using Krasvoskii method.	CO4	7 Marks
		(OR)		
6	a)	Evaluate that for a linear autonomous system described by the equation $\dot{X} = AX$ is stable at the origin if and only if for any given positive definite symmetric matrix Q, there exists a symmetric positive definite matrix P that satisfies the matrix equation $\mathbf{A^T P + PA = -Q}$.	CO2	7 Marks
	b)	Determine the stability of the autonomous system described by the matrix	CO4	7 Marks

$A = \begin{bmatrix} -1 & -2 \\ 1 & 4 \end{bmatrix}$ about the origin. Choose Q = – 1.

UNIT-IV

7	a)	A system is described by the following state equation. $\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \\ \dot{x}_3 \end{bmatrix} = \begin{bmatrix} -1 & 0 & 0 \\ 1 & -2 & 0 \\ 2 & 1 & -3 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 10 \\ 1 \\ 0 \end{bmatrix} u$ Design a state feedback controller desired closed loop poles at **−1±j2, −6**.	CO4	8 Marks
	b)	Explain the full order observer system with block diagram.	CO2	6 Marks
		(OR)		
8	a)	Explain how pole placement is accomplished by state feedback.	CO2	7 Marks
	b)	Consider the system described by the state model $\dot{X} = AX,\ Y = CX$ Where $A = \begin{bmatrix} -1 & 1 \\ 1 & -2 \end{bmatrix}, C = \begin{bmatrix} 1 & 0 \end{bmatrix}$. Design a full order observer. The desired Eigen values of observer matrix are −5, −5.	CO4	7 Marks

UNIT-V

9	a)	Find the optimal control $u^*(t)$ for the system $\dot{X} = \begin{bmatrix} 0 & 1 \\ -10 & 0 \end{bmatrix} X + \begin{bmatrix} 0 \\ 10 \end{bmatrix} u$ which minimizes the performance index $J = \frac{1}{2}\int_0^2 u^2 dt.$	CO4	9 Marks
	b)	Explain about calculus of variations.	CO1	5 Marks
		(OR)		
10	a)	Describe the constrained minimization and minimum principle.	CO1	7 Marks
	b)	Explain State Regulator problem in brief.	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

HIGH VOLTAGE ENGINEERING

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about gas/vacuum as insulator.	5 Marks
	b)	Write short notes on electric filed stress.	5 Marks
	c)	Discuss the insulation requirements for rotating machines.	4 Marks

(OR)

2	a)	Discriminate between solid, liquid and gases breakdown theories.	7 Marks
	b)	Write about estimation and control of electric stress.	7 Marks

UNIT-II

3	a)	Write about the composite dielectrics along with its properties.	7 Marks
	b)	Explain the process of thermal breakdown in solid dielectrics.	7 Marks

(OR)

4		State Paschen's law. How do you account for the minimum voltage for breakdown under PD condition?	14 Marks

UNIT-III

5	a)	Describe with a neat sketch the working of a Van de Graaff generator. What are the factors that limit the maximum voltage obtained?	7 Marks
	b)	A 12 stage impulse generator has 0.126μF condensers. The wave front and wave tail resistances connected are 800Ω and 5000Ω respectively. If the load condenser is 1000pF, find the front and tail times of the impulse wave produced.	7 Marks

(OR)

6	a)	Give the expression for ripple and regulation in voltage multiplier circuits. How are the ripple and regulation minimized?	7 Marks
	b)	A Cockcroft-Walton type voltage multiplier has eight stages with capacitances, all equal to 0.05μF. the supply transformer secondary voltage is 125kV at a frequency of 150Hz. If the load current to be supplied is 5mA, find: i) Percentage ripple. ii) The regulation. iii) The optimum number of stages for minimum regulation or voltage drop.	7 Marks

UNIT-IV

7	a)	Describe the generating voltmeter used for measuring high DC voltages. How does it be compared with a potential divider for measuring high DC voltages?	7 Marks
	b)	A generating voltmeter has to be designed so that it can have a range from 20 to 200kV DC. If the indicating meter reads a minimum current of 2μA and maximum current of 25μA, what should be the capacitance of the generating voltmeter be?	7 Marks

(OR)

8	a)	What are the conditions to be satisfied by a potential divider to be used for impulse work?	7 Marks
	b)	What is a mixed potential divider? How it is used for impulse voltage measurements?	7 Marks

UNIT-V

9		Explain the different electrical tests done on cables and transformers.	14 Marks

(OR)

10		Explain the balanced and straight detection methods for locating the partial discharges in a solid insulating system.	14 Marks

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CODE No.:14BT60208 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Regular Examinations May - 2018

COMPUTER AIDED ELECTRICAL MACHINE DESIGN

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly explain the choice of the specific electrical and magnetic loadings in electrical machine design.	CO3	7 Marks
	b)	Calculate the specific electrical and magnetic loadings of 100HP, 400V, 3 phase, 50Hz, 8 pole star connected flame proof induction motor having stator core length of 0.8m, stator bore of 0.76m, turns per phase are 272. Assume full load efficiency as 0.926 and power factor as 0.85.	CO2	7 Marks
		(OR)		
2	a)	What are the thermal considerations in machine design? Explain in detail.	CO1	7 Marks
	b)	A 300kW, 500V, 550 r.p.m., 6 pole DC generator is built with an armature diameter of 0.87m and core length of 0.35m. The lap wound armature has 720 conductors. Calculate the specific electric and magnetic loadings.	CO2	7 Marks

UNIT-II

3	a)	Discuss the factors which govern the choice of number of poles in a DC machine.	CO2	7 Marks
	b)	A design is required for a 50kW, 600 r.p.m. DC shunt generator. The full load terminal voltage is 220V. Assume average gap density is 0.83wb/m^2 and specific electrical loading is 30,000 ampere conductors/meter. Determine the number of poles, diameter and length of generator.	CO3	7 Marks
		(OR)		
4	a)	Draw the flow chart for computer aided optimal design of DC machine.	CO3	7 Marks
	b)	Briefly explain the selection of variables for optimal design of DC machine.	CO1	7 Marks

UNIT-III

5	a)	Describe the various methods of cooling of transformers.	CO1	7 Marks
	b)	Develop an algorithm for computer aided optimal design of a transformer.	CO3	7 Marks
		(OR)		
6		Determine the main dimensions of the core, number of turns and the cross section of the conductors for a 5kVA, 11000/400V, 50Hz, single phase core type distribution transformer. The net conductor area in the window is 0.6 times the net cross section of iron in the core. Assume a square cross-section for the core, a flux density 1wb/m^2, a current density 1.4A/mm^2 and a window space factor 0.2. The height of window is 3 times its width, the stacking factor is 0.9.	CO3	14 Marks

UNIT-IV

7	a)	State the factors affecting the choice of length of air gap in case of 3 phase induction motor.	CO1	6 Marks
	b)	Find the main dimensions of 15kW, 3-phase, 400V, 50Hz, 8810 r.p.m. Squirrel cage induction motor having an efficiency of 0.88 and a full load power factor of 0.9. Assume the following: Specific magnetic loading: 0.5wb/m², Winding Factor: 0.95 Specific electrical loading: 25000A/m and the Rotor peripheral speed 20 m/sec at synchronous speed.	CO3	8 Marks

(OR)

8	a)	Develop an algorithm for optimal design of 3-phase induction motor.	CO1	7 Marks
	b)	Determine the main dimensions of 20kW, 3-phase, 400V, 50Hz, 1450 r.p.m. Squirrel cage induction motor. Assume the following: Full load efficiency: 88%, Full load power factor: 0.9 lag Winding factor: 0.955, Specific magnetic loading: 0.45 wb/m² Specific electrical loading: 28000A/m and the Rotor peripheral speed 20 m/sec at synchronous speed.	CO3	7 Marks

UNIT-V

9	a)	A 3-phase alternator has a stator bore of 1.70m and a core length of 0.35m. The average gap density is approximately 0.55wb/m². Determine suitable number of turns and conductors per slot for a terminal voltage of 6600V, 50Hz and 375 r.p.m., use star connection.	CO3	7 Marks
	b)	Explain briefly about the procedural steps involved in design of rotor in a synchronous machine.	CO1	7 Marks

(OR)

10	a)	Derive the output equation of a synchronous machine.	CO2	7 Marks
	b)	A 500kVA, 3.3kV, 50Hz, 600 r.p.m., 3-phase salient pole alternator has 180 turns per phase. Estimate the length of the air gap, if the average flux density 0.54 wb/m²; the ratio of pole arc to pole pitch is 0.65; the short circuit ratio is 1.2; the gap contraction factor 1.15 and the winding factor is 0.955. The m.m.f required for gap is 80 percent of no load field m.m.f.	CO3	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

DESIGN OF MACHINE ELEMENTS-II

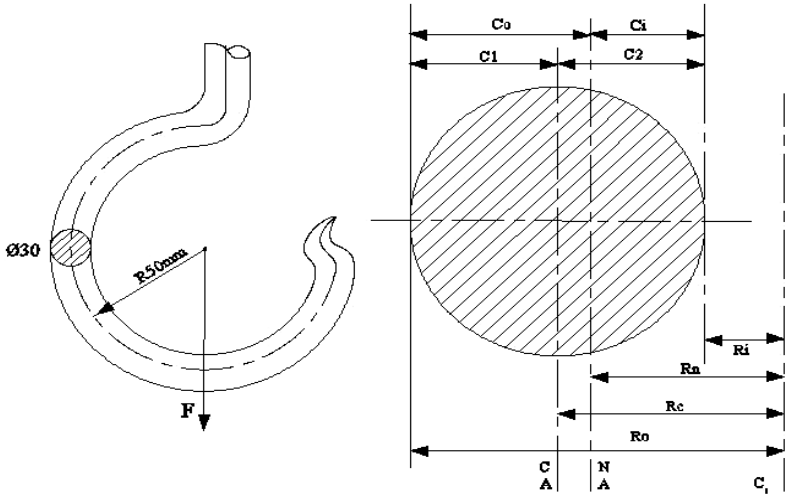
[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

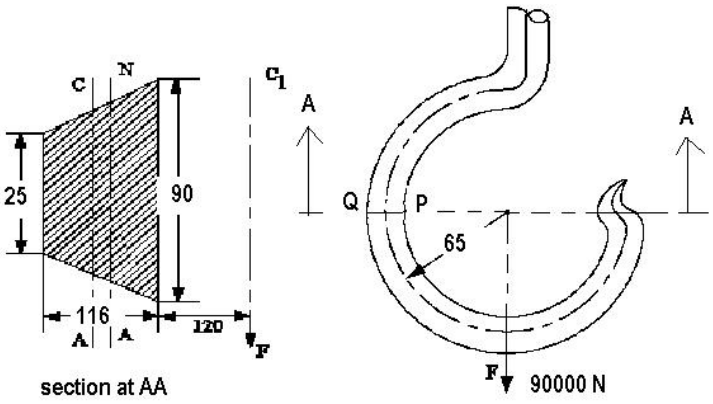
UNIT-I

1 A crane hook shown in figure below is made of 30mm diameter steel rod. The distance between the centroidal axis of the rod and the centre of curvature of the hook is 50mm. Determine the load 'F' so that the maximum stress in the rod is not to exceed 40 N/mm². 14 Marks



(OR)

2 A crane hook has trapezoidal cross-section. The maximum tensile stress occurs at point P as shown in figure. Determine: i) The distance of centre of curvature to centroidal axis. ii) B M for section AA. iii) Distance from centre of curvature to the neutral axis. iv) Area v) Maximum tensile stress (point P) vi) maximum stress at point Q. 14 Marks



UNIT-II

3 a) Write the design procedure for journal bearing. 4 Marks

b) Design a journal bearing for a centrifugal pump from the following data: Load on the journal = 20000 N; Speed of the journal = 900 r.p.m.; Type of oil is SAE 10, for which the absolute viscosity at 55°C = 0.017 kg / m-s; Ambient temperature of oil = 15.5°C; Maximum bearing pressure for the pump = 1.5 N/mm². Calculate also mass of the lubricating oil required for artificial cooling, if rise of temperature of oil 10 Marks

be limited to 10°C. Heat dissipation coefficient = 1232 W/m²/°C.

(OR)

4 A ball bearing subjected to a radial load of 4000 N is expected to have a satisfactory life of 12000 hours at 720 r.p.m. with a reliability of 95%. Calculate the dynamic load carrying capacity of the bearing, so that it can be selected from manufacturer's catalogue based on 90% reliability. If there are four such bearings each with a reliability of 95% in a system, what is the reliability of the complete system? 14 Marks

UNIT-III

5 Design a spur gear drive with the following data: The speed of the pinion = 1200 r.p.m. The speed of the gear = 400 r.p.m. Power = 25KW. Number of teeth on pinion = 20. 14 Marks

(OR)

6 A pair of helical gears are to transmit 15KW. The teeth are 20^0 full depth in diametral plane and have a helix angle of 30^0. The pinion runs at 2000 r.p.m and has 80mm pitch diameter. The gear has 320mm pitch diameter. If the gears are made of cast steel having allowable static strength of 110N/mm², determine a suitable module and face width from static strength considerations and check the gears for wear, given f_{es} = 618 N/mm². 14 Marks

UNIT-IV

7 Design of helical compression spring used for operating a valve. The spring is subjected to a load range of 100 to 150N, i.e., 100N when the valve is closed, and 150N when it is open. The deflection of the spring, i.e., the valve lift during the above load range is 7mm. Take spring index as 10. Determine the size of the wire, size and number of coils and pitch of the coils. 14 Marks

(OR)

8 Design the concentric spring with following data: 14 Marks

Load on composite springs = 1000 N
Maximum shear stress = 480 N/mm²
Spring index = 6.0
Deflection = 12 mm

UNIT-V

9 a) The conical valve of an I.C. engine is 60mm in diameter and is subjected to a maximum gas pressure of 4N/mm². The safe stress in bending for the valve material is 46MPa. The valve is made of steel for which k = 0.42. The angle at which the valve disc seat is tapered is 30. Determine: i) Thickness of the valve head. ii) Stem diameter. iii) Maximum lift of the valve. 7 Marks

b) Determine the dimensions of an I-section connecting rod for a petrol engine from the following data: Diameter of the piston = 110mm; Mass of the reciprocating parts = 2kg; Length of the connecting rod from centre to centre = 325mm; Stroke length = 150mm; R.P.M. = 1500 with possible over speed of 2500; Compression ratio = 4 : 1; Maximum explosion pressure = 2.5 N/mm². 7 Marks

(OR)

10 a) Explain the various stresses induced in the connecting rod. 4 Marks

b) A four stroke internal combustion engine has the following specifications: Brake power = 7.5kW; Speed = 1000 r.p.m.; Indicated mean effective pressure = 0.35N/mm²; Maximum gas pressure = 3.5N/mm²; Mechanical efficiency = 80 %. Determine: i) The dimensions of the cylinder, if the length of stroke is 1.4 times the bore of the cylinder. ii) Wall thickness of the cylinder, if the hoop stress is 35MPa. iii) Thickness of the cylinder head and the size of studs when the permissible stresses for the cylinder head and stud materials are 45MPa and 65MPa respectively. 10 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

OPERATIONS RESEARCH

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Solve the following Linear Programming Problem (LPP). 14 Marks

$Max\ Z = 4x_1 + 6x_2 + 2x_3$

$st\ \ 4x_1 - 4x_2 \le 5,$

$-x_1 + 6x_2 \le 5,$

$-x_1 + x_2 + x_3 \le 5$

$x_i \ge 0$

(OR)

2 Solve the following LPP by using dual simplex method. 14 Marks

$Min\ Z = x_1 + 2x_2 + 3x_3$

$st\ \ x_1 - x_2 + x_3 \ge 4$

$x_1 + x_2 + 2x_3 \le 8$

$x_2 - x_3 \ge 2 \quad x_i \forall\ i \ge 0$

UNIT-II

3 a) Name two applications of travelling sales man problem with example. 4 Marks

b) A machine operator process five types of item on his machine each week and must choose a sequence for them. The set up cost per change depends on the items presently on the machine and item to be made according to the following table. 10 Marks

	To					
	A	B	C	D	E	
A	-	4	7	3	4	
B	4	-	6	3	4	From
C	7	6	-	7	5	
D	3	3	7	-	7	
E	4	4	5	7	-	

If he produces only one piece of item in a week, how should he sequence the items on his machine in order to minimize the total set up cost?

(OR)

4 a) When do you say a solution to a transportation problem is degenerate? 4 Marks

b) A company has three plants X, Y, Z and each producing 50, 100, 150 units of a similar products. There are five ware houses W1, W2, W3, W4 and W5 having demand of 100, 70, 50, 40 and 40 units respectively. The cost of transporting the products from plants to warehouses is given in the following matrix. 10 Marks

	W1	W2	W3	W4	W5
X	20	28	32	55	70
Y	48	36	40	44	25
Z	35	55	22	45	48

Determine the transportation schedule so that the cost is minimized.

UNIT-III

5 A distance network consists of 11 nodes which are distributed as shown in the following table. Find the shortest path from node 1 to node 11 and the corresponding distance. 14 Marks

Arc	Distance	Arc	Distance
1-2	8	5-8	12
1-3	7	5-9	7
1-4	1	6-9	9
2-5	5	7-9	6
3-5	9	7-10	13
3-6	2	8-11	4
3-7	8	9-11	2
4-7	10	10-11	15

(OR)

6 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. 14 Marks

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	18	22
E	B	3	2	9	18
F	D, E	3	3	19	19

UNIT-IV

7 Customers arrive at one –window drive-in bank according to a Poisson distribution with mean of 10 per hour. Service time per customer is exponential with a mean of 5 minutes. The space in front of the window, including that for the serviced car, can accommodate a maximum of 3 cars. The other cars can wait outside this space. 14 Marks

i) What is the probability that an arriving customer can drive directly to the space in front of the window?

ii) What is the probability that an arriving customer will have to wait outside the indicated space?

iii) How long is an arriving customer expected to wait before starting service?

(OR)

8 A tourist car has 25 taxis in operation. He keeps 3 drivers as reserve to attend the calls in case the scheduled driver reports sick. The probability distribution of sick drivers is as follows: 14 Marks

Number of sick	0	1	2	3	4	5
Probability	0.1	0.15	0.10	0.15	0.22	0.28

Simulate for 10 days and estimate:

i) The utilization of reserve drivers.

ii) Probability that at least one taxi will be off the road due to non-availability of a driver.

Take random numbers as 82 89 78 24 53 61 18 45 04 23.

UNIT-V

9 Find the ranges of value of p and q, which will render the entry (2, 2) a saddle point for the game. 14 Marks

		B		
		I	II	III
A	I	2	4	5
	II	10	7	q
	III	4	p	6

(OR)

10 Find the optimum strategies and value of game for the following game by graphical method. 14 Marks

		B				
A		1	2	3	4	5
	1	-1	3	4	-2	6
	2	4	2	6	3	2

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

HEAT TRANSFER

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 A 3 cm OD steam pipe is to be covered with two layers of insulation each having a thickness of 2.5cm. The thermal conductivity of one material of insulation is 5 times that of the other. Determine the effect of placing the better insulating material next to pipe than it is placed as an outer layer. Assume that the outside and inside surface temperatures are same. 14 Marks

(OR)

2 Derive the expression for the general 3D heat conduction equation in Cartesian coordinate system with neat sketch. 14 Marks

UNIT-II

3 An annular aluminium fin of rectangular profile is attached to a circular tube having an outside diameter of 25mm and a surface temperature of 250°C. The fin is 1mm thick and 10mm long, and the temperature and the convection coefficient associated with the adjoined fluid are 25°C and 25 W/m^2-K respectively. 14 Marks

i) Estimate the heat loss per the fin.

ii) If 200 such fins are spaced at 5mm increments along the tube length, what will be the heat loss per meter of tube length?

(OR)

4 Carbon steel balls (density 7833 kg/m^3, thermal conductivity 54 W/m-K, specific heat 0.465 kJ/kg-K and thermal diffusivity is 1.474×10^{-6} m^2/s) 8mm in diameter are annealed by heating them first to 900°C in a furnace and then allowing them to cool slowly to 100°C in ambient air at 35°C. If the average heat transfer coefficient is 75 W/m^2-K, determine how long the annealing process will take. If 2500 balls are to be annealed per hour, determine the total rate of heat transfer from the balls to the ambient air. 14 Marks

UNIT-III

5 a) Using dimensional analysis, obtain an expression for Nusselt number in terms of Reynolds and Prandtl numbers. 6 Marks

b) The resistance R experienced by a partially submerged body depends up on the velocity V, length of the body L, viscosity of the fluid μ, density of the fluid ρ and gravitational acceleration g. Obtain a dimensionless expression for R. 8 Marks

(OR)

6 a) Explain the concept of velocity and thermal boundary layers. 5 Marks

b) Air at 25°C flows past a flat plate at 2.5m/s. the plate measures 600mm x 300mm and is maintained at a uniform temperature at 95°C. Calculate the heat loss from the plate, if the air flows parallel to the 600mm side. How this heat loss would be affected if the flow of air is made parallel to the 300mm side? 9 Marks

UNIT-IV

7 a) Define condensation and differentiate filmwise and dropwise condensation. 6 Marks

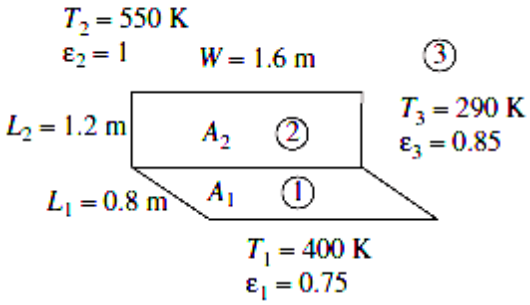
b) Water is boiled at the rate of 25kg/h in a polished copper pan, 280mm in diameter, at atmospheric pressure. Assume nucleate boiling conditions, calculate the temperature of the bottom surface of the pan. 8 Marks

(OR)

8 It is required to design a shell-and-tube heat exchanger for heating 2.4kg/s of water from 20°C to 90°C by hot engine oil (C_p = 2.4 kJ/kg-K) flowing through the shell of the heat exchanger. The oil makes a single pass entering at 145°C and leaving at 90°C with an average heat transfer coefficient of 380W/m²-K. The water flows through 12 thin walled tubes of 25mm diameter with each-tube making 8-passes through the shell. The heat transfer coefficient on the water side is 2900W/m²-K. Calculate the length of the tube required for the heat exchanger to accomplish the required water heating. 14 Marks

UNIT-V

9 Consider two rectangular surfaces perpendicular to each other with a common edge which is 1.6m long. The horizontal surface is 0.8m wide and the vertical surface is 1.2m high. The horizontal surface has an emissivity of 0.75 and is maintained at 400K. The vertical surface is black and is maintained at 550K. The back sides of the surfaces are insulated. The surrounding surfaces are at 290K and can be considered to have an emissivity of 0.85. Determine the net rate of radiation heat transfers between the two surfaces and between the horizontal surface and the surroundings. 14 Marks



(OR)

10 Consider two large parallel plates; one at 1000 K with emissivity 0.8 and other is at 300 K having emissivity 0.6. A radiation shield is placed between them. The shield has emissivity as 0.1 on the side facing hot plate and 0.3 on the side facing cold plate. Calculate percentage reduction in radiation heat transfer as a result of radiation shield. 14 Marks

CODE No.:14BT60304 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

CAD-CAM

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Define CAD/CAM and discuss the implementation of CAD/CAM in a manufacturing Scenario with a neat sketch. 14 Marks

(OR)

2 Mention the need for graphics standard and discuss about PHGIS and IGES data formats. 14 Marks

UNIT-II

3 a) Differentiate between Wire Frame Modeling and Solid Modeling. 7 Marks
b) What is 3D Transformation? Explain with an example. 7 Marks

(OR)

4 a) Describe various types of graphics output devices. 7 Marks
b) Explain B-rep approach of Solid Modeling. 7 Marks

UNIT-III

5 The component to be machined is shown in Fig.1. It is assumed that the pocket is through and hence only outside is to be machined as a finish cut of the pocket. The tool to be used is a 20mm diameter slot drill. The setting is done with point A as reference (0, 0, 0) and the reference axes are along X and Y directions. Write NC part program for machining the component. 14 Marks

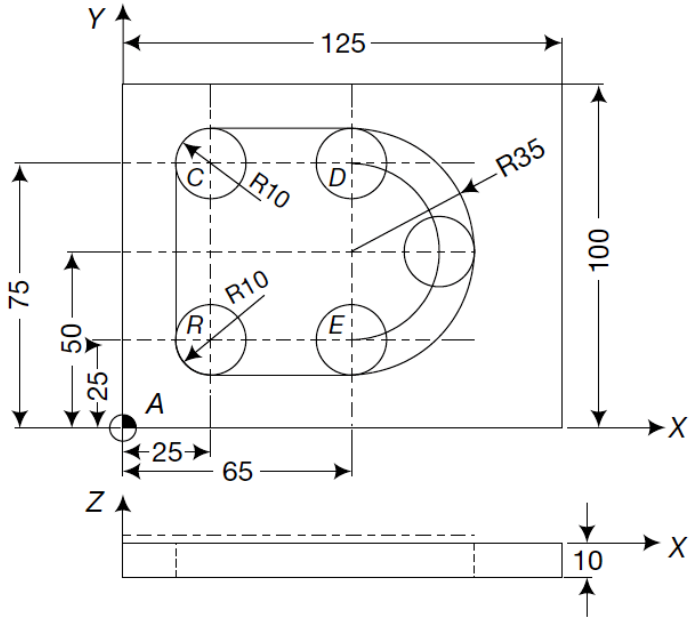

Fig.1

(OR)

6 The component to be machined is shown in Fig 2. Write a program using canned cycles to drill all the holes as shown in Fig 2. 14 Marks

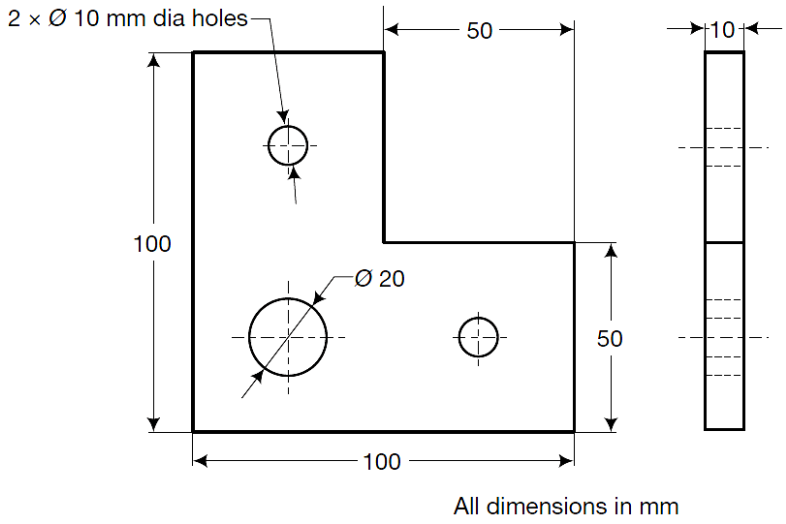

Fig.2

UNIT-IV

7 Develop the opitz form code (first 5 digits) with justification for the component shown in Fig.3 below. 14 Marks

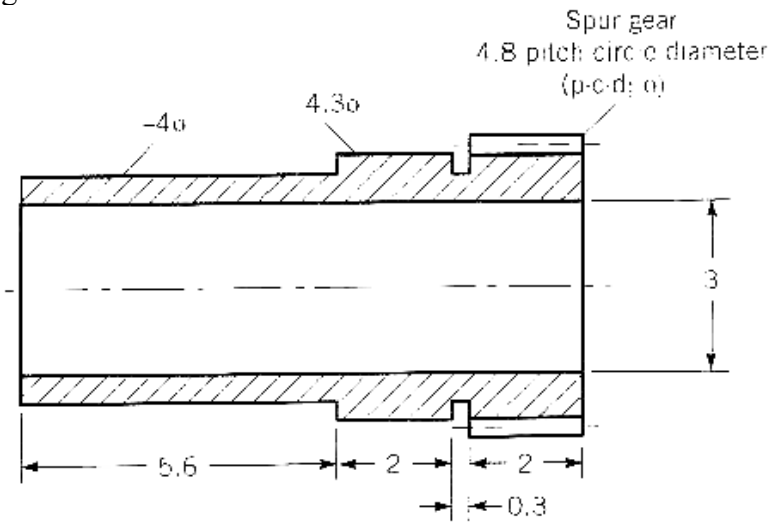

Fig.3

(OR)

8 What is meant by CAPP? With a neat sketch, explain about the working of a Retrieval CAPP System. 14 Marks

UNIT-V

9 Briefly explain the material handling system and computer control System in CIM. 14 Marks

(OR)

10 a) Explain non-contact non-optical inspection methods. 7 Marks

b) Briefly explain about automated guided vehicles. 7 Marks

CODE No.:14BT60305 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

ARTIFICIAL INTELLIGENCE AND ROBOTICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Analyze how the branch-and-bound technique could be used to find the shortest solution to a water jug problem.	14 Marks
	(OR)	
2	Summarize the constraint satisfaction procedure to use in breadth-first and best-first search technique.	14 Marks

UNIT-II

3	Program the interpreter for a production system. You will need to build a table that hold the rules and a matcher that compares the current state to the left sides of the rules. You will also need to provide an appropriate control strategy to select among competing rules. Use your interpreter as the basis of a program that solves any one real time problems.	14 Marks
	(OR)	
4	Elaborate the function of semantic nets with relevant diagram.	14 Marks

UNIT-III

5	Illustrate the following: i) Robot classifications. ii) Robot workspace. iii) Robot notations.	14 Marks
	(OR)	
6	Describe the following sensors: i) Inductive sensors. ii) Capacitive sensors. iii) Ultrasonic sensors.	14 Marks

UNIT-IV

7	Find the inverse kinematics solution of 4-axis SCARA robot.	14 Marks
	(OR)	
8	Explain different types of control schemes.	14 Marks

UNIT-V

9	Write about the following: i) Goals of AI research. ii) Robot learning.	14 Marks
	(OR)	
10	Explain various types of task planning concepts in robotics.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

DIGITAL SIGNAL PROCESSING

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Check the stability of the systems defined by, 6 Marks

i) $y(n) = x(n) + \frac{1}{2}x(n-1) + \frac{1}{4}x(n-2)$

ii) $y(n) = \sum_{k=-\infty}^{n+5} x(k)$

b) Find the forced response of the system described by the difference equation 8 Marks
$y(n) - 4y(n-1) + 4y(n-2) = x(n) - x(n-1)$. When input is, $x(n) = (-1)^n u(n)$.

(OR)

2 a) For the given spectra $X(e^{jw})$, find the positive time sequence $x(n)$. 4 Marks

$$X(e^{jw}) = \frac{e^{jw}}{e^{2jw} + 0.1e^{jw} - 0.02}$$

b) Determine the frequency response and plot the magnitude and phase response for the system, $y(n) = x(n) + 0.9x(n-2) - 0.4y(n-2)$. 10 Marks

UNIT-II

3 Compute the DFT of each of the following finite length sequences considered to be of length N (where N is even) 14 Marks

i) $x(n) = 1 \quad 0 \le n \le (N/2)-1$
$= 0 \quad N/2 \le n \le N-1$

ii) $x(n) = a^n \quad 0 \le n \le N-1$
$= 0 \quad$ otherwise

(OR)

4 a) Find the 4-point real sequence x(n) if its 4-point DFT samples are 7 Marks
X(0) = 6, X(1) = –2 + j2, X(2) = – 2, X(3) = –2 – j2. Use DIT-FFT algorithm.

b) Find the 4-point DFT of the sequence, x(n) = sin(n/4) using DIF-FFT algorithm. 7 Marks

UNIT-III

5 a) What is warping effect? What is its effects on magnitude and phase response? Write a short note on pre-warping. 6 Marks

b) Explain in-detail analog low-pass Chebyshev filter design process. 8 Marks

(OR)

6 Design digital band-stop Butterworth filter with the following specifications using bilinear transformation. 14 Marks

i) Stop-band 100 to 600Hz.
ii) 20dB attenuation at 200 and 400 Hz.
iii) The gain at w=0 is unity.
iv) Pass-band attenuation is 3dB.

UNIT-IV

7 a) Obtain the frequency response of Linear phase FIR filter when the impulse response is symmetric and ' N' is odd. 7 Marks

b) When cascade form realization is preferred in FIR filters? Obtain cascade realization of the following FIR transfer function with minimum number of multipliers. 7 Marks

$$H(z) = \left(1 + z^{-1}\right)\left(\frac{1}{2} - \frac{1}{4}z^{-1} + \frac{1}{2}z^{-2}\right)$$

(OR)

8 What is the principle of designing FIR filters using windows? Design ideal high-pass filter using Hamming window, with the frequency response $H_d\left(e^{jw}\right) = \begin{cases} 1, & for \frac{\pi}{4} \le |w| \le \pi \\ 0, & for\ |w| \le \frac{\pi}{4} \end{cases}$. Find h(n) for N=11. Find H(z). Plot the magnitude response. 14 Marks

UNIT-V

9 Explain in detail about the modified bus structures and memory access schemes in programmable DSP's. 14 Marks

(OR)

10 With the help neat block diagram, explain the architectural details of TMS320C6X DSP. 14 Marks

CODE No.:14BT60402 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

MICROWAVE ENGINEERING

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Name different electromagnetic frequency spectrum region and microwave band designations for CCIR/IEEE/US military bands.	7 Marks
	b)	Determine the characteristic wave impedance of a rectangular wave guide with dimension of 3cm x 2cm operates in the TM_{11} mode at 10GHz.	7 Marks
		(OR)	
2	a)	What is a cavity resonator? Discuss the applications of cavity resonators.	7 Marks
	b)	A rectangular wave guide is filled by dielectric material of ε_r=9 and has dimensions of 7cm x 3.5cm. It operates in the dominant TE mode. i) Determine the cut off frequency. ii) Find the phase velocity in the guide at a frequency of 2GHz. iii) Find the guided wave length at 2GHz.	7 Marks

UNIT-II

3	a)	Explain the Hybrid Ring. Compare its performance with Magic Tee.	7 Marks
	b)	With a neat diagram, explain the operation of a microwave attenuator.	7 Marks
		(OR)	
4	a)	Explain the properties of S-parameters with examples. Giving the proof of unitary property for a lossless junction.	7 Marks
	b)	An X-band directional coupler has a coupling coefficient of 10dB. What will be the output power in the main branch of the input power is 20mW. What will be the value of directivity and its location for an ideal directional coupler?	7 Marks

UNIT-III

5	a)	Write about the limitations and losses in a conventional tubes when used at microwave frequencies.	7 Marks
	b)	With a neat schematic, explain the working principle of single cavity reflex klystron.	7 Marks
		(OR)	
6	a)	How is tuning achieved in reflex klystron oscillators? Mention the tuning range of such a device.	7 Marks
	b)	Explain the bunching process of reflex klystron and also derive the equation for efficiency.	7 Marks

UNIT-IV

7	a)	Explain the salient features, performance characteristics and applications of TWT.	7 Marks
	b)	A normal circular magnetron has the following parameters: Inner Radius Ra = 0.15m, Outer Radius Ro = 0.45m, Magnetic flux density =1.2 mW b/m^2. i) Determine the Hull cut off voltage. ii) Determine the cut off magnetic flux density if the beam voltage Vo as 6000V.	7 Marks

iii) Determine the cyclotron frequency in GHz.

(OR)

8 a) What are slow wave structures? Explain how a helical TWT achieves amplification. 7 Marks

b) A helical TWT has diameter of 2mm with 50 turns per cm. 7 Marks

i) Calculate axial phase velocity.

ii) Calculate anode voltage at which the TWT can be operated for useful gain.

UNIT-V

9 a) Explain J-E characteristics of Gunn diode and indicate negative resistance region. 7 Marks

b) Explain the following in brief : 7 Marks

i) Two Valley Model Theory.

ii) RWH Theory.

(OR)

10 a) Explain the method of measurement of low and high VSWR with neat diagrams. 7 Marks

b) Comment on measured low and high VSWR value that is being varied by the load section. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

VLSI DESIGN

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail of the fabrication procedure for n-Well CMOS technology with a neat diagram.	8 Marks
	b)	What are the differences between CMOS and BiCMOS technologies in fabrication?	6 Marks
		(OR)	
2	a)	Determine the pull-up to pull-down ratio for an nMOS inverter driven by another nMOS inverter.	8 Marks
	b)	Estimate g_m of the device for NMOS transistor operating saturation region with the following parameters: $V_{GS} = 5V$, $V_{tn} = 1.0V$, W/L = 3μm/0.18μm and $\mu_n C_{ox} = 95\mu A/V^2$.	6 Marks

UNIT-II

3	a)	What are various limitations of scaling?	4 Marks
	b)	Design a symbolic layout for a complementary CMOS circuit that implements **Y= (A+BC)'.**	10 Marks
		(OR)	
4	a)	Derive an expression for a nMOS inverter pair delay whose transistor size is **4:1**.	8 Marks
	b)	Derive the expression for effective resistance and capacitance estimation using RC delay models.	6 Marks

UNIT-III

5		Design a 4 x 4 barrel shifter using complementary transmission gates and explain its operation.	14 Marks
		(OR)	
6		Discuss different multipliers in detail.	14 Marks

UNIT-IV

7	a)	Write short notes on PLA and PAL.	6 Marks
	b)	Explain the architecture of 22V10 PAL architecture.	8 Marks
		(OR)	
8	a)	Explain the programming methods of FPGA.	7 Marks
	b)	Describe high density memory elements used in VLSI design.	7 Marks

UNIT-V

9	a)	Explain the various logic synthesis tools available for ASIC and FPGA-based design.	7 Marks
	b)	Explain various types of simulation.	7 Marks
		(OR)	
10	a)	What is need for testing? Explain the difference between testing and verification.	6 Marks
	b)	Explain the chip level test techniques. Explain the chip level test techniques.	8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

IMAGE PROCESSING

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write notes on "Sampling and Quantization" in Digital Image Processing.	7 Marks
	b)	Explain 8 connectivity and 4 connectivity in a digital image.	7 Marks
		(OR)	
2	a)	Define Haar transform. List any 4 properties of Haar transform.	7 Marks
	b)	What is Hotelling transform and list any 4 properties of the same.	7 Marks

UNIT-II

3	a)	Describe any two basic intensity transformation functions and mention their applications.	7 Marks
	b)	How do we compute the histogram of an image? Illustrate the inference of contrast by looking at the Histogram of an image.	7 Marks
		(OR)	
4	a)	Explain the concept of spatial filtering and mention the 3 x 3 spatial masks for image smoothing and image sharpening.	7 Marks
	b)	Describe image smoothing and image sharpening using frequency domain filtering.	7 Marks

UNIT-III

5	a)	Explain the different spatial filters used for restoration of noisy images.	7 Marks
	b)	Write short notes on inverse filtering used for image restoration.	7 Marks
		(OR)	
6	a)	Describe the different noise models used in modelling the image degradation during acquisition or transmission process.	7 Marks
	b)	Explain the constrained least squares filtering used for image restoration.	7 Marks

UNIT-IV

7		What is redundancy? Explain "run length coding" based compression technique using an example.	14 Marks
		(OR)	
8		Explain why image compression is needed. Discuss the various types of redundancies.	14 Marks

UNIT-V

9	a)	Discuss about point detection, line detection and edge detection.	7 Marks
	b)	Describe the different models for representation of colour information in images.	7 Marks
		(OR)	
10	a)	Describe the different methods for edge detection used for image segmentation.	7 Marks
	b)	Write short notes on pseudo colour image processing.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

PRINCIPLES OF COMMUNICATION

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the block diagram of a communication system.	7 Marks
	b)	Find the Fourier Transform of : i) $x(t)=\cos\omega_0 t$. ii) $x(t)=\sin\omega_0 t$.	7 Marks
		(OR)	
2	a)	Define the power spectral density and show that Autocorrelation and power spectral density are Fourier transform pair.	7 Marks
	b)	Explain various types of communication systems.	7 Marks

UNIT-II

3	a)	The output power of an AM transmitter is 1KW when sinusoidally modulated to a depth of 100%. Calculate the power in each side band when the modulation depth is reduced to 40%.	7 Marks
	b)	Explain the operation of balanced modulator.	7 Marks
		(OR)	
4	a)	Explain a method for the generation of FM.	7 Marks
	b)	Explain the operation of diode detector with necessary equations.	7 Marks

UNIT-III

5	a)	Explain the sampling theorem. Discuss about aliasing effect.	7 Marks
	b)	Explain the block diagram of TDM system.	7 Marks
		(OR)	
6	a)	Explain the generation of PWM.	7 Marks
	b)	Explain the demodulation of PAM.	7 Marks

UNIT-IV

7	a)	Derive an expression for SNR of a PCM system using uniform quantization.	8 Marks
	b)	Write the differences between coherent and non coherent systems. Give examples.	6 Marks
		(OR)	
8	a)	Draw the block diagram of binary PSK receiver and explain the working principle.	8 Marks
	b)	Distinguish between uniform and non uniform quantization.	6 Marks

UNIT-V

9	a)	Define and derive an expression for entropy.	7 Marks
	b)	Explain the concept of Shanon Fano coding technique by taking an example.	7 Marks
		(OR)	
10	a)	Explain the algebraic structure of the binary cyclic codes.	7 Marks
	b)	Draw the code tree of a convolutional code of code rate r = 1/2 and constraint length of K = 3 starting from the state table and state diagram for an encoder which is commonly used.	7 Marks

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CODE No.:14BT60501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

OBJECT ORIENTED ANALYSIS AND DESIGN

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the various views considered in modeling a system's architecture.	7 Marks
	b)	Enumerate the steps to model single inheritance.	7 Marks
		(OR)	
2		List the UML diagrams which give a static view and dynamic view of a system. Explain.	14 Marks

UNIT-II

3	a)	Discuss briefly about the Elements of Object Model for the design of student examination system.	7 Marks
	b)	What do you mean by a class diagram? Explain how a class diagram represents logical design and structural model with examples.	7 Marks
		(OR)	
4	a)	What are the Objects and Classes? Discuss in detail about the advanced features of a class diagrams.	7 Marks
	b)	Explain how an object diagram is used to represent a scenario in the logical design of a Bank Account Management System.	7 Marks

UNIT-III

5	a)	Briefly discuss about interaction diagrams with suitable examples.	7 Marks
	b)	Develop sequence diagram for deposit checking in the bank.	7 Marks
		(OR)	
6	a)	What do you mean by user-centered design? Discuss with an example about use case analysis of a software system.	7 Marks
	b)	Write about the requirement model. Clearly explain with a suitable example the steps for capturing requirement.	7 Marks

UNIT-IV

7	a)	Enumerate the steps to model a family of signals.	7 Marks
	b)	Explain how to draw state chart diagram with an example.	7 Marks
		(OR)	
8	a)	Define event and signal. Explain the four kinds of events modelled by UML.	7 Marks
	b)	Explain the steps to model reactive objects and objects that migrate.	7 Marks

UNIT-V

9	a)	What do you mean by software architecture? Discuss different steps involved in an architectural model.	7 Marks
	b)	Explain with examples about modeling executables, tables, files and API.	7 Marks
		(OR)	
10	a)	Explain the deployment diagrams for modeling an embedded system	7 Marks
	b)	Explain the component diagrams for modeling source code for fully distributed systems	7 Marks

CODE No.:14BT60502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

ENGINEERING SYSTEMS ANALYSIS AND DESIGN

[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 different types of systems.	7 Marks
	b)	Explain the role of a System Analyst.	7 Marks
		(OR)	
2	a)	Define the term Agile. Explain different stages in the Agile modeling development process.	7 Marks
	b)	Briefly discuss the use of CASE Tools.	7 Marks

UNIT-II

3	a)	What are Enterprise Systems? Explain the use of enterprise resource planning.	7 Marks
	b)	Explain Use Case modeling.	7 Marks
		(OR)	
4	a)	Explain different levels in an organization.	7 Marks
	b)	Draw neat E-R diagram for Hospital Management System.	7 Marks

UNIT-III

5	a)	What are the major fundamentals of a project? Explain.	7 Marks
	b)	What is feasibility? How feasibility is determined?	7 Marks
		(OR)	
6	a)	What is critical path? Explain.	7 Marks
	b)	Explain Gantt chart and PERT.	7 Marks

UNIT-IV

7	a)	Explain the structural diagrams.	7 Marks
	b)	Explain the importance of the Object Oriented approach in the System Development.	7 Marks
		(OR)	
8	a)	Define class. Explain different relationships in a class diagram with an example.	7 Marks
	b)	What are Swim lanes? Explain its representation.	7 Marks

UNIT-V

9	a)	Explain how the output content is related to output method.	7 Marks
	b)	Enlist and explain the factors that must be considered when choosing output technology.	7 Marks
		(OR)	
10	a)	What is “three-clicks” rule? Explain with example.	7 Marks
	b)	Enlist the guide lines to facilitate the design of a good display output.	7 Marks

CODE No.:14BT61001 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

INDUSTRIAL INSTRUMENTATION-II

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the principle of resistance thermometers. Discuss about the choice of materials and the temperature ranges of RTD.	7 Marks
	b)	Bring out the differences between radiation pyrometer and optical pyrometer. Which is preferred in industry?	7 Marks
		(OR)	
2	a)	Explain about the use of thermal wall and factors to be considered in the choice of materials for thermal wall. What factors influence the speed of response of thermocouple?	7 Marks
	b)	Explain the principle and working of IC temperature sensors employed in industry.	7 Marks

UNIT-II

3	a)	When do you recommend hot wire anemometer to be used for flow measurement? How its speed of response is increased? Can you suggest any method of bidirectional flow measurement using this technique?	7 Marks
	b)	Explain the working of contour type dall tube with suitable diagram.	7 Marks
		(OR)	
4	a)	Explain the principle of operation of orifice plates and venturi tube with neat sketch	7 Marks
	b)	How the flow rate is measured using vortex shedding flow meters?	7 Marks

UNIT-III

5		Distinguish between the float type and the displacer type liquid level gauges. How is the change in the density of the liquid taken into account in these gauges? How is the measurement range limited in the float type system?	14 Marks
		(OR)	
6	a)	Can the capacitive method of level gauging be used in conducting type liquids as well? If yes, show how this is done?	7 Marks
	b)	How optical fibre technology can be adopted for liquid level gauging? Describe a method with suitable diagrams.	7 Marks

UNIT-IV

7	a)	Describe how a Wheatstone bridge may be used to control various physical parameters.	7 Marks
	b)	Define the term 'null' as applied to bridge measurement, illustrate with example.	7 Marks
		(OR)	
8	a)	Explain the working of an auto zero amplifier.	7 Marks
	b)	Describe in brief the different methods used for measurement of medium resistances.	7 Marks

UNIT-V

9	a)	What is a proximity sensor? Explain the principle of Hall effect type proximity sensor with a neat diagram.	7 Marks
	b)	Explain the principle of thermal conductivity leak detector.	7 Marks

(OR)

10	a)	Describe the principle of ultrasonic type limit switch with a neat diagram.	7 Marks
	b)	What is the need for protection systems? Explain various protection systems used in industry.	7 Marks

CODE No.:14BT61002 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

PROCESS CONTROL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the elements of process control and its variable with neat diagram.	7 Marks
	b)	Explain in detail about characteristics and modeling of a liquid system.	7 Marks
		(OR)	
2	a)	Define self-regulation. Give an example of a self-regulated process.	7 Marks
	b)	Explain about various symbols used for P&ID in instrumentation.	7 Marks

UNIT-II

3	a)	Explain in detail about composite control modes.	7 Marks
	b)	Discuss about two-position control with example. Why differential gap is used in the system?	7 Marks
		(OR)	
4	a)	Explain the pneumatic force type PI controller with a neat sketch.	7 Marks
	b)	Explain the electronic type PID controller with a neat sketch.	7 Marks

UNIT-III

5	a)	Explain in detail about determination optimum settings for mathematically described process using frequency response.	7 Marks
	b)	Discuss damped oscillation method for control loop tuning.	7 Marks
		(OR)	
6	a)	Discuss direct synthesis method for control tuning.	7 Marks
	b)	Explain the method of tuning of controllers by Cohen-Coon method.	7 Marks

UNIT-IV

7	a)	Explain current to pressure converter with a neat diagram.	7 Marks
	b)	Discuss about any one type of electrical actuator with neat diagram.	7 Marks
		(OR)	
8	a)	Explain the characteristics of control valve.	7 Marks
	b)	List different types of valves and elaborate on ball valves.	7 Marks

UNIT-V

9	a)	Explain feed forward control with an example of distillation column.	7 Marks
	b)	Explain over-ride control scheme with an example.	7 Marks
		(OR)	
10	a)	Describe split range control. Under what circumstances is it recommended?	7 Marks
	b)	Explain the application of cascade control in distillation column.	7 Marks

CODE No.:14BT61201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

DATAWAREHOUSING AND DATA MINING

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain star schema, snowflake schema and fact constellation schema.	7 Marks
	b)	Explain association analysis with suitable example.	7 Marks
		(OR)	
2	a)	Explain 3-tier DW-architecture.	7 Marks
	b)	What is Data Generalization? Define Attribute Oriented Induction.	7 Marks

UNIT-II

3	a)	Explain steps in data integration and data transformation.	7 Marks
	b)	Explain methods in data discretization.	7 Marks
		(OR)	
4	a)	What are the steps involved to eliminate the noisy and explain why data cleaning as a process?	7 Marks
	b)	Explain Data Reduction methods.	7 Marks

UNIT-III

5	a)	Give few techniques to improve the efficiency of Apriori algorithm.	7 Marks
	b)	Briefly explain classification of association rules with suitable examples.	7 Marks
		(OR)	
6	a)	What is market analysis? Explain with clear example.	7 Marks
	b)	Explain about quantitative association Rule mining.	7 Marks

UNIT-IV

7	a)	Discuss Naïve Bayesian classification.	7 Marks
	b)	Explain the Bayesian Belief Network.	7 Marks
		(OR)	
8	a)	Discuss sequential covering algorithm for rule induction.	7 Marks
	b)	What is associative classification?	7 Marks

UNIT-V

9	a)	Explain partitioning methods with an example.	7 Marks
	b)	Explain the methods for detecting the outliers.	7 Marks
		(OR)	
10	a)	Explain DBSCAN algorithm with an example.	7 Marks
	b)	Explain different clustering approaches with an example.	7 Marks

CODE No.:14BT61202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

WEB PROGRAMMING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is HTML? Why it is used for? How are HTML tags written?	7 Marks
	b)	Design a table in HTML. How to use frames in HTML? Explain with example.	7 Marks
		(OR)	
2	a)	Compare and Contrast HTML and DHTML.	7 Marks
	b)	Create simple HTML pages which demonstrate the use of various types of list.	7 Marks

UNIT-II

3	a)	Describe the scoping rules for the JavaScript with examples.	7 Marks
	b)	List the advantages of CSS.	7 Marks
		(OR)	
4	a)	What is function? Explain how parameters are passed to functions in JavaScript.	7 Marks
	b)	Write a script that reads an integer and determine and display whether it is an odd or even number.	7 Marks

UNIT-III

5	a)	Write a PHP program to implement linear search on an array of elements.	7 Marks
	b)	Write about object oriented features in PHP.	7 Marks
		(OR)	
6	a)	How to declare and initialize arrays in PHP? Explain with example.	7 Marks
	b)	Write a PHP program to swap two numbers using functions.	7 Marks

UNIT-IV

7	a)	What is *session handling*? Explain how to work with sessions with examples.	7 Marks
	b)	What are *binding variables*? Write a PHP code for binding results with the mysqli extension.	7 Marks
		(OR)	
8	a)	Explain how to handle errors during the connection establishment between PHP and MySQL.	7 Marks
	b)	Explain how PHP deals with cookies with examples.	7 Marks

UNIT-V

9	a)	Define XML namespaces. Explain various aspects of namespaces.	7 Marks
	b)	State and explain various XML HttpRequest object properties.	7 Marks
		(OR)	
10	a)	What is the role of DOM parser? Write a code that reads XML file (include employee information) and displays the output using DOM parser.	10 Marks
	b)	Explore various features of AJAX.	4 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

CYBER SECURITY AND LAWS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is information security? Explain cyber crime and cyber security in this reference.	7 Marks
	b)	What are the main objectives and scope of IT Act 2000?	7 Marks
		(OR)	
2	a)	Discuss different issues and challenges in cyber crime.	6 Marks
	b)	Explain cyber crimes and its types. Also differentiate between cyber bullying and cyber stalking.	8 Marks

UNIT-II

3	a)	Explain the following terms related to DoS attack. i) Smurf. ii) SYN flood. iii) Ping of death. iv) Ping flood. v) Tear drop.	8 Marks
	b)	What are the traditional problems involved with cyber crimes?	6 Marks
		(OR)	
4	a)	What are the punishments liable for spreading viruses as per IT Act 2000?	7 Marks
	b)	Explain the terms: Trojans, Phishing, Spam, Cyber squatting and Web encroachment.	7 Marks

UNIT-III

5	a)	Explain cyber crime and federal laws in the US.	7 Marks
	b)	Explain public-key certificate.	7 Marks
		(OR)	
6		Explain the challenges to Indian law and cyber crime scenario in India.	14 Marks

UNIT-IV

7	a)	Describe social computing and associated challenges for organizations.	6 Marks
	b)	What is a threat? Explain in detail the various groups of threats facing an organization.	8 Marks
		(OR)	
8	a)	Define Intellectual Property Right. How intellectual properties can be protected? Explain.	7 Marks
	b)	What precautions should be taken while solving any case of cyber crime and why? Explain your opinion.	7 Marks

UNIT-V

9	a)	Explain the ethical dimension of cyber crimes.	8 Marks
	b)	Describe parliament attack.	6 Marks
		(OR)	
10	a)	What do you mean by payment instruments used in electronic commerce? Explain the difference in credit card and debit card.	7 Marks
	b)	Discuss about purchase goods and services.	7 Marks

CODE No.:14BT70109 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

RURAL TECHNOLOGY

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the role of science and technology in rural development.	6 Marks
	b)	Write short notes on role of following in rural development: i) Rural business hubs. ii) NABARD.	8 Marks
		(OR)	
2	a)	Write about use of technology in improving rural infrastructure.	6 Marks
	b)	Write short notes on role of following in rural development: i) CSIR. ii) NIF.	8 Marks

UNIT-II

3		What are the different types of energies? Explain in detail.	14 Marks
		(OR)	
4	a)	What is meant by 3R principle? Advantages of 3R principle.	7 Marks
	b)	How to recycle and conserve the waste?	7 Marks

UNIT-III

5	a)	Explain the principles used in building construction technologies for rural development.	7 Marks
	b)	How cultivation helps in growing rural area production?	7 Marks
		(OR)	
6		Explore the food and agro based technologies which will give profits to community.	14 Marks

UNIT-IV

7	a)	Explain how to conserve water in rural areas. Explain about rain water harvesting in detail.	7 Marks
	b)	What is meant by apiculture? Explain opportunities present in apiculture.	7 Marks
		(OR)	
8		Understand the importance of bio-fertilizers and uses of bio-fertilizers.	14 Marks

UNIT-V

9	a)	Explain in detail the role of information technology and its usage in common mans daily life.	6 Marks
	b)	Write short notes on corporate social responsibilities.	8 Marks
		(OR)	
10	a)	Explain the role of private sector participation in agriculture and service sectors.	7 Marks
	b)	Mention different village adoption schemes promoted by central government for rural development.	7 Marks

CODE No.:14BT70304 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

INDUSTRIAL AUTOMATION AND ROBOTICS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define programmable automation and its advantages.	6 Marks
	b)	Discuss about types and strategies of automation.	8 Marks
		(OR)	
2	a)	Discuss the factors favoring the use of assembly lines.	7 Marks
	b)	Discuss about the working of manual assembly line.	7 Marks

UNIT-II

3	a)	Explain the functional line diagram representation of robot arm.	7 Marks
	b)	Write a brief note on vacuum gripper.	7 Marks
		(OR)	
4		Classify robots according to the coordinates of motion. With a sketch and an example, explain the features of each type.	14 Marks

UNIT-III

5	a)	Discuss about the forward transformation of 3DOF of robot arm.	8 Marks
	b)	Prove that rotation about x-axis followed by y-axis will not be equal to rotation about y-axis followed by x-axis.	6 Marks
		(OR)	
6	a)	Explain the working principle of pneumatic non-servo robot manipulator control system with neat sketch.	7 Marks
	b)	Explain briefly about Denavit-Hartenberg notation of joint for common robot.	7 Marks

UNIT-IV

7	a)	Write a short note on potentiometers and resolver.	7 Marks
	b)	Discuss in detail about velocity sensors and their uses.	7 Marks
		(OR)	
8		Explain the working principle of Range sensors with neat sketch.	14 Marks

UNIT-V

9	a)	Discuss about the classification of robot languages.	7 Marks
	b)	Explain the functions of robot controller.	7 Marks
		(OR)	
10	a)	Discuss about different types of robot programming methods.	7 Marks
	b)	Draw the flex pendant and explain about its function.	7 Marks

CODE No.:14BT70501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

COMPILER DESIGN

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Find regular expressions for the following languages over the alphabet {0, 1}. i) Strings containing exactly two 0's. ii) Strings that begin or end with 00 or 11. iii) Strings that contain even number of 0's.	9 Marks
	b)	Differentiate between compiler and interpreter.	5 Marks
		(OR)	
2	a)	Discuss in detail about construction of parsing tables.	6 Marks
	b)	Give the parse tree for the following while statement. while **A>B&A<=2*B-5** do **A:=A+B**.	8 Marks

UNIT-II

3	a)	Find the First and Follow sets for the following grammar. **E → TA** **A → +TA / ∈** **T → FB** **B → *FB / ∈** **F → (E) / id**	10 Marks
	b)	Distinguish between top down parsing and bottom up parsing. Give one example for each.	4 Marks
		(OR)	
4	a)	Find the predictive parser for the following grammar and parse the sentence **(a+b)*c** **E→E+T|T** **T→T*F|F** **F →(E)| id**	6 Marks
	b)	Prove that if a grammar is LL(1), then it is definitely LR(1).	8 Marks

UNIT-III

5	a)	What is type checker? Write translation scheme for type checking of expressions.	10 Marks
	b)	Give an example each for implicit and explicit type conversion.	4 Marks
		(OR)	
6	a)	What is an L-attributed definition? Give one example and draw annotated parse tree for a sentence generated by the example grammar.	7 Marks
	b)	Write a syntax directed definition to convert the given binary number with its decimal equivalent.	7 Marks

UNIT-IV

7 a) What are the variants of syntax trees? Shows the DAG for the expression **a + a * (b - c) + (b - c) * d**. 7 Marks

b) Translate the arithmetic expression **a + - (b + c)** into: 7 Marks

i) Quadruples.

ii) Triples.

iii) Indirect triples.

(OR)

8 a) What is an activation tree? When will we use activation trees in storage organization? Explain with an example. 7 Marks

b) What is an access - link? What are the problems encountered using access - link approach in storage organization? 7 Marks

UNIT-V

9 a) What are the issues in code generation process? Explain in detail. 4 Marks

b) Construct the flow graph for the following code: 10 Marks

```
a=0;
b=1;
while(a<b)
{
if c<d then a=a+1;
  b++;
}
```

(OR)

10 a) Construct the DAG for the basic block with following code: 10 Marks

```
d := b*c
e := a+b
b := b*c
a := e-d
```

b) What happens if the code optimization phase is not present in compiler? Explain. 4 Marks

CODE No.:14BT71507 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2018

SOFTWARE PROJECT MANAGEMENT

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Describe the methods used in managing the development of large scale software systems.	14 Marks
		(OR)	
2		Describe the improvements done to the basic waterfall process that would eliminate most of the development risks.	14 Marks

UNIT-II

3		Describe the primary objectives, essential activities and primary evaluation criteria of the inception phase.	14 Marks
		(OR)	
4	a)	Explain the transition in the phases of the life cycle process.	8 Marks
	b)	Explain the evolution of planning fidelity in the WBS over the life cycle.	6 Marks

UNIT-III

5		Describe the states that evolve through a project environment artifact.	14 Marks
		(OR)	
6	a)	Explain in detail iterative workflows.	6 Marks
	b)	Define artifacts. Explain management set artifacts.	8 Marks

UNIT-IV

7	a)	What are the roles and responsibilities to the line of business organization?	7 Marks
	b)	Explain about the software management team in project organization.	7 Marks
		(OR)	
8	a)	Describe about the round-trip engineering.	7 Marks
	b)	Differentiate between configuration baseline and control board.	7 Marks

UNIT-V

9	a)	Explain modern software economics.	8 Marks
	b)	Explain project organization of CCPDS-R.	6 Marks
		(OR)	
10	a)	Briefly explain various life cycle expectations pragmatic software metrics.	9 Marks
	b)	Explain about next-generation project performance.	5 Marks

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

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 analysis? Explain the determinants of demand.

2. What is break- even Analysis? Explain how BEP is used by the managers in their day-to-day operations. What are its limitations?

3. What are the objectives and policies of pricing? Explain.

4. Explain the features of sole trader form of organization. Discuss the merits and demerits of sole trader form of organization.

5. Define accountancy. Explain the accounting principles.

6. Prepare the final accounts from the following trial balance extracted from the bank of Mr. Praveen for the year ending with 31-12-2016, if closing stock was valued at Rs.90,000/-.

Particulars	Dr. (Rs.)	Cr. (Rs.)
Drawings and Capital	10,000	1,19,400
Plant & Machinery	38,300	
Salaries	10,800	
Loan Payable		79,630
Interest on Loan	14,370	
Furniture	52,000	
Purchases and Sales	2,50,000	3,41,340
Opening Stock	95,300	
Wages	43,750	
Insurance	930	
Discounts Allowed	3,900	
Sundry Debtors and Creditors	62,000	59,630
Cash at Bank	18,650	
Total	**6,00,000**	**6,00,000**

7. What is the importance of Capital Budgeting? Explain the basic steps involved in evaluating Capital Budgeting proposals.

8. Explain in detail the advantages of computerized accounting system.

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

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) With help of a block diagram, explain the basic building blocks of an op-amp.
b) Explain the following AC characteristics of an op-amp.
i) Frequency compensation technique.
ii) Slew rate.

2. a) Derive the expression for the output voltage of a non-inverting amplifier.
b) Explain about any two linear and non linear applications of op-amp.

3. a) Explain the block diagram of PLL. List the applications of PLL.
b) What is the major difference between digital and analog PLLs?

4. a) Design CMOS transistor circuit for 2-input AND gate.
b) Explain steady state electrical behavior of CMOS logic.

5. a) Write short notes on TTL, ECL and CMOS digital logic families.
b) Explain the interfacing of a TTL gate driving CMOS gates and vice versa.

6. What is the difference between functions and procedures in VHDL? Give suitable examples. Discuss the use of function as a type conversion function.

7. a) Design a 4 x 4 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 down the truth table and VHDL code for the 4-bit left to right shift register. Also draw the circuit and output waveforms.
b) Explain briefly about the synchronous design methodology.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

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) Write the pseudo-code of BFS and explain with the help of a graph.
b) Short note on Optimal Storage on Tapes.

3. Write Merge Sort algorithm. Explain it by analyzing its time complexity.

4. a) What is dynamic programming? Explain with an example.
b) Write the program for Merge Sort.

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) Explain All-Pair shortest path algorithm.
b) Write Prim's algorithm. Explain the method with an example.

7. What is the theory over the use of Divide and Conquer Methodology? Why do you think using Divide and Conquer Methodology improves the performance of an algorithm? Write a program which can best explain the concept of Divide and Conquer Methodology.

8. a) Explain the classes of P and NP.
b) Describe the clique decision problem with an example.

CODE No.:10BT60106

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

FOUNDATION ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe briefly wash boring method and Auger boring method of soil exploration with a neat sketch.
b) Explain geophysical methods of investigation with neat sketches.

2. a) A retaining wall 8m high with a smooth vertical back retains a clay backfill with $c^1 = 15$ kN/m^2, $\varphi^1 = 10^0$ and $\gamma = 18$ kN/m^3. Calculate the total active thrust on the wall assuming that tension cracks may develop to the full theoretical depth.
b) Explain Culmann's graphical method for estimating active earth pressure.

3. a) What is retaining wall? Discuss about the various types of retaining walls.
b) Derive an expression for design depth of penetration for an anchored bulkheads penetration sandy soil.

4. a) Explain the Bishop's method of analysis for stability of slopes.
b) Explain the stability analysis of finite slopes by fellenius method of slices.

5. a) Discuss the various types of foundations and their selection with respect to different situations.
b) What is the safe bearing capacity of a footing resting on the surface of a saturated clay of unconfined compressive strength of 90 kN/m^2. Let F.S. = 3.0.

6. a) Explain plate load test, in detail.
b) A footing 6m x 4m in plan, transmits a pressure of 150 kN/m^{2}on a cohesive soil having $E = 6 \times 10^4$ kN/m^2 and $\mu = 0.50$. Determine the immediate settlement at the centre, assuming it to be: (i) flexible footing (ii) a rigid footing.

7. a) What is the basis on which the dynamic formulae are derived? Mention two well known dynamic formulae and explain the symbols involved.
b) A group of 16 piles of 50cm diameter is arranged with a centre to centre spacing of 1.0m. The piles are 9m long and are embedded in soft clay with an unconfined compressive strength of 60kPa. Determine the ultimate load capacity of the pile group. Let adhesion factor = 0.60.

8. a) What are the different shapes of foundation wells and what are their comparative merits and demerits?
b) What are the various components of well foundation and discuss them in detail?

CODE No.:10BT60201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

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 DC and AC drives.
b) A 250 V DC shunt motor has an armature resistance of 0.5 ohms and field resistance of 250 0hms. When driving a constant torque load at 600 r.p.m, the 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) Write the advantages of electric heating.
b) Explain about induction heating.

3. Explain the following:
i) Rebuilding. ii) Hard facing.
iii) Defects in welding. iv) Under-water welding.

4. a) What is an integrating sphere? Explain its use in illumination engineering.
b) A lamp of 500 candle power is placed at the centre of a room, 20m x 10m x 5m. Calculate the illumination in each corner of the floor and point in the middle of a 10m wall at a height of 2m floor.

5. Describe with a neat sketch the principle of electric discharge lamp. State the advantages and disadvantages of discharge lamps over the filament lamp and give their applications.

6. a) Write various types of traction systems.
b) Explain different methods of electric braking applied to three-phase induction motor.

7. a) Explain what do you understand by speed-time curves. What is its use in practice?
b) An electric train has schedule speed of 25 km/h between stations 800m apart. The duration of station stop is 20 seconds, the maximum speed is 20 percent higher than the average running speed and the breaking retardation is 3 km/h/s. Calculate the rate of acceleration required to operate this service.

8. Write short notes on:
i) Cost benefit analysis.
ii) Smart meters.
iii) Loss distribution in energy efficient motors.

CODE No.:10BT60202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

POWER SEMICONDUCTOR DRIVES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Derive the basic expressions for speed- torque of DC motor drive. Explain the principle and operation of DC shunt motor drive connected to a single phase fully controlled converter. Draw its performance characteristics.

2. a) Write short notes on plugging for separately excited DC motor with neat diagrams
b) 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.

3. a) Explain four-quadrant operation of a motor driving a hoist-load in detail.
b) With the help of neat block diagram, explain the closed loop operation of DC separately excited motor.

4. a) Explain the principle of closed-loop control of a DC motor drive using suitable block diagram.
b) Explain about the four-quadrant chopper drive for a DC separately excited motor.

5. a) Explain about the control of induction motor by AC voltage controllers of both 1-Ø and 3-Ø. Also discuss the advantages and disadvantages of stator voltage control.
b) Explain briefly about the current source inverter fed induction motor drive.

6. a) Write short notes on CSI fed IM operation.
b) Draw and explain the working of slip-power recovery system using commentator less kramer drive.

7. a) What is a self control mode of Synchronous motor?
b) Draw and explain the block diagram of a self controlled synchronous motor fed from a 3-Ø inverter.

8. Explain the operation and control requirements of Switched Reluctance motor with a neat diagram.

CODE No.:10BT60301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

OPERATIONS RESEARCH

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Use Simplex method to solve the following LP problem.
Minimise: $Z= 3x+2.5y$
subject to the following constraints
$2x+ 4y \geq 40$
$5x+ 2y \geq 50$ and $x, y \geq 0$

2. a) Explain the procedure in resolving the degeneracy case in transportation problems.
b) Solve the following minimization transportation problem.

		Market				Available
		P	Q	R	S	
Plant	A	4	3	0	5	24
	B	1	2	6	1	17
	C	3	6	2	3	19
Required		15	19	18	8	

3. a) What are the situations which make the replacement of items necessary? Explain with examples.
b) A manufacturer is offered two machines A and B. A is priced at Rs.5,000/- and running costs are estimated at Rs.800/- for each of the first five years, increasing by Rs.200/- per year in the sixth and subsequent years. Machine B, which has the same capacity as A, costs Rs.2,500/- but will have running costs of Rs.1,200/- per year for six years, increasing by Rs.2,000/- per year thereafter. If the money is worth 10% per year, which machine should be purchased assuming that both machines will eventually be sold for a scrap at a negligible value?

4. a) Discuss the applications of queuing theory.
b) In a bank, with a single server, there are two chairs for waiting customers. On an average one customer arrives every 10 minutes and each customer takes 5 minutes for getting served. Arrival rate is randomly distributed according to Poisson distribution.
i) The probability that an arrival will get a chair to sit on.
ii) The probability that an arrival will have to stand.

5. Explain the process on making decisions under uncertainty using:
i) Hurwicz criteria ii) Laplace Criteria

6. a) Derive the expression for EOQ and state the assumptions made.
b) The annual demand for a product is 64,000 units. The buying cost per order is Rs.10 and the estimated cost of carrying one unit in stock for a year is 20%. The normal price of the product is Rs.10 per unit. However, the supplier offers a quantity discount of 2% on an order of at least 1000 units at a time and a discount of 5% if the order is for at least 5000 units. Suggest the most economic purchase quantity per order.

7. a) Explain the Analytic Hierarchy Process.

b) A newspaper boy has the following probabilities of selling magazine:

No. of copies sold	Probability
10	0.10
11	0.15
12	0.20
13	0.25
14	0.30

Cost of copy is 30 paise and sale price is 50 paise. He cannot return unsold copies. How many copies should he order?

8. a) Differentiate between the mixed strategy and pure strategy.

b) Find the optimum strategies for the two stores from the following pay-off matrix shown the gain or loss in customers for store 1.

Action of Store 2

		1	2	3
Action of store 1	I	0	20	-60
	II	30	-10	-20
	III	70	-80	-30

CODE No.:10BT60302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

METROLOGY AND MEASUREMNTS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the characteristics of line standards and end standards.
b) Explain the wavelength standard method with neat sketch.

2. a) Explain about interchangeable manufacturing and the selective assembly of machine parts.
b) Define the following terms:
i) Allowances ii) Clearance Fit iii) Interference fit iv) Transition fit.

3. a) Explain the working principle of LVDT.
b) Write short note on:
i) Bevel Protractor.
ii) Angle gauges.

4. a) Describe about three wire method for measuring the effective diameter of various screw threads.
b) Describe a pitch measuring machine.

5. a) What are various modes of measurement? Explain with example.
b) Explain various static characteristics of measurement systems.

6. a) With the help of diagram, explain the working of Hydraulic dynamometer.
b) Explain the working principle of Bourdon tube pressure gauge by mentioning the advantages and limitations.

7. a) Explain the calibration of strain gauges.
b) Define gauge factor of a strain gauge and also derive expression for it.

8. Write a short note on:
i) Transfer functions.
ii) Mathematical models of systems.
iii) Zero order system.

CODE No.:10BT60401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

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 discrete system has a unit sample response h(n) given by $h(n)=\frac{1}{2}\delta(n)+\delta(n-1)+\frac{1}{2}\delta(n-2)$.
Find the system frequency response **H ($e^{j\omega}$)**, plot magnitude and phase.

2. a) How will obtain linear convolution from circular convolution?
b) Write differences between linear and circular convolution.

3. Compute the eight point DFT of the given sequence **x(n) = { ½, ½, ½, ½, 0, 0, 0, 0}** using radix - 2 DIT - DFT algorithm.

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)+1/4y(n-2)=x(n)** in cascade form.

5. Design a Chebyshev filter with a maximum pass band attenuation of 3.5 dB at Ω_p= 30rad/sec and stop band attenuation of 25dB at Ω_s= 50rad/sec.

6. What are the techniques of designing FIR filters?

7. With neat diagram and supportive derivation, explain multirate signal processing using two techniques.

8. Write Short Notes on:
i) Trans-multiplexers. ii) Signal Compression.

CODE No.:10BT60402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the block diagram of digital communication system and explain each block in detail.
b) Mention the advantages of digital communication over analog communication.

2. a) Distinguish between pulse code modulation and delta modulation.
b) What is an adaptive delta modulation system and mention its advantage over delta modulation system?

3. a) Derive an expression for probability of error for PSK scheme.
b) For the data **1011011101**, draw and discuss the wave forms of QPSK and DPSK Signals.

4. a) Compare and contrast optimum and matched filters.
b) Determine the probabilities of occurrence of errors in BFSK and QPSK.

5. a) Define terms: Information, Entropy, Un Certainty and Rate of information.
b) What is meant by mutual information? Discuss its properties.

6. a) What is source coding? Explain Shannon - Fano algorithm.
b) Derive the relation for capacity of AWGN channel.

7. a) Explain the encoding of a message word using linear block codes with relevant expressions.
b) Design an encoder for (7, 4) systematic cyclic code generated by $g(x) = 1 + x + x^3$.

8. a) Briefly explain Viterbi algorithm for decoding of convolutional codes.
b) What are convolution codes? How are they different from block codes?

CODE No.:10BT60404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

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) What are the advantages of using an Assembly language in comparison with high level language for programming.
b) Why address and data buses of 8085 are multiplexed? Explain the need and how to de-multiplex them.

2. Explain the architecture of Intel 8086 with the help of a block diagram.

3. a) What is addressing mode? Discuss 8086 addressing modes with an example instruction for each mode.
b) Write an ALP for 8086 to calculate LCM of two 8-bit unsigned integers.

4. Describe 8255A PPI and interfacing with 8086 processor with neat diagrams.

5. a) Discuss about the methods of serial data transfer.
b) Write a program for initialization of 8251 and receiving serial data depending on your own assumptions.

6. Explain the operation performed by DMA controller and interfacing with 8086 processor using timing waveforms.

7. a) List the hardware features of 8051 Microcontroller.
b) Explain internal RAM composition in 8051 Microcontroller.

8. What are the different modes available in the operation of a programmable timer?

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

THEORY OF COMPUTATION

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Design a DFA for the language **L = {ba^n / n ≥ 0}**.
b) Design DFA over {a,b}to accept strings which does not contains two consecutive b's.

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_2))	-	$\{q_0, q_1\}$

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) Generate the regular expression for the CFL given below.
S → aSbS / bSaS/ aSab
What is the language generated by the above grammar?
b) State and prove Pumping lemma for regular sets.

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) 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 generating **L= {WCW^{T}W Є {a, b}*}**.
b) Let G be a CFG with the following productions
S → aBc
A → abc
B → aAb C → AB
C → c
Construct a PDA M such that the language generated by M and G are equivalent.

7. a) What is unrestricted grammar? Give an example.
b) Explain the language generated by unrestricted grammar.

8. a) Discuss about P and NP class of problems.
b) Explain about universal tuning machine.

❀ ❀ ❀

CODE No.:10BT61201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

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 following with example using UML.
i) Inheritance. ii) Polymorphism.
b) Explain the principles of modeling.

2. Explain the following.
i) Modeling Simple dependencies.
ii) Structural relationship.
iii) Instances.

3. a) Write the common modeling techniques used for class diagram design.
b) Describe the steps to modeling object structures.

4. a) Distinguish between sequence and collaboration diagrams.
b) With the help of a suitable diagram, explain the modeling of flow of control by organization.

5. a) Discuss in detail the Usecase Modeling along with example.
b) Discuss about UML activity diagrams.

6. a) Explain in detail about the substates and history states.
b) Draw and explain the state machine to control in a home security system.

7. a) What relationship exists between components and interfaces? Explain with suitable example.
b) Explain the common modeling techniques for deployment diagrams.

8. Draw and explain the following for point of sales system.
i) State Chart diagram.
ii) Class diagram.

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

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) Differentiate between OSI and TCP/IP reference models**.**
b) Discuss different components in computer networks.

2. Explain about public switched telephone network.

3. Discuss the design issues of data link layer in details with suitable diagrams.

4. Discuss in detail about CSMS/CD and explain its efficiency calculation.

5. Discuss in detail about Congestion Control algorithms in Network Layer.

6. Explain TCP congestion control strategy.

7. Explain about Domain Name System (DNS).

8. Explain about Public Key Cryptography.

CODE No.:10BT70501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2017

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 an interpreter? Differentiate between interpreter and compiler.
b) Explain the compiler construction tools.

2. a) Convert the following grammar into LL(1) grammar
S→ ABC A →a A | C B → b C→ c
b) Construct LL(1) parse table for the above grammar.

3. a) What is handle pruning? Explain.
b) Describe about LR grammars.

4. a) What is abstract syntax tree? Explain with an example.
b) Describe semantic analysis.

5. a) Write about type systems and checking of types.
b) Distinguish between name equivalence and structure equivalence? Explain with an 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. Explain the following:
i) Common sub-expression elimination.
ii) Dead-code elimination.
iii) Renaming of temporary variables.

8. Write a short notes on:
i) What is a flow graph? Explain with an example.
ii) Discuss various object code forms.

CODE No.:10BT40503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

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 deferent concepts of programming languages.

2. a) Give a brief description about i) Variable ii) Binding.
b) What are the advantages of user-defined data types?

3. a) How pass by value-result is distinguished from pass by reference? Give an example to show these parameter passing mechanisms.
b) What is meant by aliases in C++? Explain with an example how to use aliases.

4. a) Write a prolog program that returns a list containing the union of the elements of given two lists.
b) Discuss the operations on atoms, operations of lists available in LISP.

5. a) Explain the object oriented concepts.
b) Discuss about semaphores, monitors, and message passing.

6. a) Describe the exception handling in C++.
b) Explain how backtracking works in prolog.

7. a) Explain the features of first functional programming Language.
b) Define structures and arrays in ML with examples.

8. a) What are the rules followed to declare a variable in PHP and Python?
b) Explain the procedural abstraction in ABAP and PERL.

CODE No.:10BT50422 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

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) What is an op-amp? List and explain the four building blocks of an op-amp. Explain briefly the difference between digital and linear IC's.
b) Draw the pin and schematic diagram for 741 op-amp. Explain each block.

2. a) Derive the expression for the output voltage of a non-inverting amplifier.
b) Explain about any two linear and non linear applications of op-amp.

3. a) Draw the circuit of Schmitt trigger using 555 timer and explain its operation.
b) Draw and explain the functional diagram of a 555 timer.

4. a) Draw the circuit diagram of basic CMOS gate and explain the operation.
b) Explain the effect of floating inputs on CMOS gates.

5. a) Give the comparison between TTL, CMOS and ECL families.
b) Design TTL three state NAND gate and explain the operation with the help of function table.

6. a) Explain the program structure of VHDL.
b) Explain various data types and sub types used in VHDL.

7. a) Design a full adder using two half adders. Write VHDL dataflow program for the above implementation.
b) Design full subtractor with logic gates and write VHDL dataflow program.

8. a) Convert a D flip-flop to a J-K flip-flop by adding external gates with clock enable.
b) Discuss about synchronous DRAMs.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

DESIGN AND ANALYSIS OF ALGORITHMS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write the non recursive algorithm for finding the Fibonacci sequence and derive its time complexity.
b) Write an algorithm to find largest of given 'n' numbers. Derive its time complexity. Using big-oh notation.

2. a) What are the short-comings of empirical time complexity approach? Explain in detail the approaches which were devised in order to remove these short-comings.
b) Explain **0/1** Knapsack problem with an example.

3. a) Explain Binary search algorithm. Trace out the algorithm with an example.
b) Explain Strassen's matrix multiplication algorithm. Analyze its time complexity.

4. a) Explain the Greedy algorithm for sequencing of unit time jobs with deadlines and profits.
b) Explain how the Greedy approach is useful in the optimal storage on tapes problem.

5. a) Explain Principle of Optimality and how it is working in different problems which can be solved by dynamic programming technique.
b) Explain how to solve string editing problem using dynamic programming technique.

6. a) Explain general method of backtracking. Explain backtracking algorithm for n-queens problem.
b) Explain how to generate dynamic state space tree for **0/1** Knapsack problem.

7. a) Write an algorithm of LCBB to find the minimum cost answer node.
b) Describe explicit constraints and implicit constraints.

8. a) Explain the classes of P and NP.
b) Describe the clique decision problem with an example.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

FOUNDATION ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the phases in a complete subsurface exploration? Explain them in detail.
b) Differentiate between disturbed, undisturbed and non-representative samples.

2. a) What are the various types of lateral earth pressures? Discuss briefly with sketches.
b) With the given data, determine graphically the total active earth pressure acting on a retaining wall, H = 8m, $\varphi=30^{o}$; $\beta=10^{o}$, $\delta=10^{o}$, $\gamma = 20kN/m^3$. Use Rebhann's method.

3. a) What are the different types of retaining walls and state its suitability?
b) What are the design criteria to be satisfied for the stability of a gravity retaining wall? Indicate briefly how you will ensure the same.

4. a) Classify the types of failures of a slope.
b) Stability analysis by the method of slices for 1:1 slope on the critical slip gave the following results.

Sum of tangential forces = 160kN
Sum of normal forces = 360kN
Sum of neutral forces = 60kN
Length of failure surface = 18m
Angle of shearing resistance = 15^{0}
Effective cohesion = $20kN/m^2$

Calculate the factor of safety with respect to shear strength.

5. a) Derive Terzaghi's bearing capacity equation.
b) Discuss the various types of foundations and their selection with respect to different situations.

6. a) What are the components of settlement of a foundation? How are they evaluated for cohesive soils?
b) A 30cm square bearing plate settles by 8mm in the plate load test on cohesion less soil, when the intensity of loading is 180kPa. Estimate the settlement of a shallow foundation of 1.6m square under the same intensity of loading.

7. a) Discuss the classification of piles based on different criteria with the aid of neat sketches.
b) What are the advantages and disadvantages of Driven piles?

8. a) Discuss the problems associated with well sinking. How to overcome them?
b) Describe the component parts of a Pneumatic Caisson with a neat sketch.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

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, 50Hz slip ring induction motor with a rotor resistance per phase of 0.2Ω and standstill reactance of 1.0Ω/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 about dielectric heating.
b) What are the applications of induction heating and with a neat sketch, explain the construction and principle of indirect core type induction furnace.

3. a) Write the different advantages and applications of electric welding.
b) Write the differences between resistance welding and arc welding.

4. a) Define: i) Luminous intensity. ii) Point source. iii) Lumen.
b) Six lamps are used to illuminate a certain room. If the luminous efficiency of each lamp is 11 lumens/watt and the lamps have to emit a total flux of 10,000 lumens. Calculate:
i) The mean spherical luminous intensity.
ii) The cost of energy consumed in 4 hours if the charge for electrical energy is 50 paise per unit.

5. a) Compare a tungsten filament lamp with fluorescent tube.
b) Discuss about flood lighting in detail.

6. a) What is electric traction? Write the advantages of electric traction.
b) Explain how regenerative braking is applied to three phase induction motor.

7. a) Explain clearly 'free running', 'coasting' and 'breaking' with reference to the electric traction systems.
b) The maximum speed of a suburban electric train is 60km/hr. its scheduled speed is 40km/hr and duration of stops is 30sec. if the acceleration is 2km/hr/sec and distance between stops is 2kms, determine the retardation.

8. Write short notes on:
i) Cost benefit analysis.
ii) Smart meters.
iii) Loss distribution in energy efficient motors.

CODE No.:10BT60202 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

POWER SEMICONDUCTOR DRIVES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the concept of constant torque control and constant power control drive.
b) Explain the principle and operation of DC series motor drive connected to a single phase fully controlled converter. Draw its performance characteristics.

2. a) Write short notes on plugging for separately excited DC motor with neat diagrams.
b) Explain the speed - torque characteristics of a separately excited DC motor connected to a three phase semi controlled converter.

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 200 amperes. What would be the speed at which the electric braking torque is 70% of its initial value?

4. a) Write short notes on dynamic braking for separately excited DC motor with neat diagrams.
b) A 230V, 1200 r.p.m., 15A separately excited motor has an armature of 1.2Ω. Motor is operated under dynamic braking with chopper control. Braking resistance has a value of 20Ω. Calculate duty ratio of chopper for motor speed of 1000 r.p.m. and braking torque equal to 1.5 times rated motor torque.

5. a) Explain the operation voltage source inverter fed induction motor drive operated in PWM inverter mode.
b) With the help of power circuit and waveforms, explain the operation of half wave cycloconverter fed induction motor drive.

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) Explain separate control and self control of synchronous motor.
b) With the suitable circuit diagrams, discuss in detail the principle of operation of self controlled synchronous motors employing cycloconverters.

8. Explain the operation and control requirements of Switched Reluctance Motor with a neat diagram.

CODE No.:10BT60301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

OPERATIONS RESEARCH

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Use Simplex method to solve the following LP problem.
Maximise: $Z = 3x + 4y + z$ subject to the following constrains
$x+2y+3z \leq 90$
$2x+ y+ z \leq 60$
$3x+y +2z \leq 80$ and $x, y, z \geq 0$

2. a) Discuss the steps of Hungarian method.
b) Solve the following transportation problem to maximize profit. Cell entries are Profits in Rs/unit.

	Destination				
Source	**1**	**2**	**3**	**4**	**Supply**
A	40	25	22	33	200
B	44	35	30	30	60
C	38	38	28	30	140
Demand	80	40	120	60	

3. a) Discuss the various replacement models.
b) The initial cost of an item is Rs. 15,000 and maintenance costs for different years are given below. What replacement policy should be adopted if the capital is worth 10% and there is no salvage value?

Year	1	2	3	4	5	6	7
Maintenance Cost (Rs.)	2,500	3,000	4,000	5,000	6,500	8,000	10,000

4. A railway reservation system has 3 counters. On an average 48 people arrive in an 8-hour day. Each reservation counter person spends 15 minutes on an average on an arrival. If the arrivals are Poissonly-distributed and service times are according to exponential distribution, then find:
i) Average number of customers in the system and average number of customers waiting to be served.
ii) Average time a customer spends in the system and average waiting time for a customer.
iii) The probability that a customer has to wait before he gets service.

5. a) Define the terms: Total, Free and Independent floats.
b) Tasks A, B, C,…., H, I constitute a project. The precedence relationships are
A < D; A < E; B < F; D < F; C < G; C < H; F < I; G < I.
Draw a network diagram to represent the project and find the minimum time of completion of the project when time, in days, of each task is as follows:

Task	A	B	C	D	E	F	G	H	I
Time	8	10	8	10	16	17	18	14	9

Also identify the critical path.

6. a) What are the different costs associated with the inventory control problem?

b) Given the data for an item of uniform demand, instantaneous delivery time and back order facility. Annual demand = 800 units; cost of an item = Rs. 40; Ordering cost = Rs. 800/order; inventory carrying cost = 40%/unit/year and back order cost = Rs. 10/unit/year. Find:

i) The economic order quantity.
ii) The maximum number of backorders.
iii) The time between orders.
iv) The total annual cost.
v) The maximum inventory.

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) Briefly explain the limitations of game theory.

b) Find the optimum strategies for the following game by graphical method.

		B				
		1	2	3	4	5
A	1	-1	3	4	-2	6
	2	4	2	6	3	2

CODE No.:10BT60305 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

DESIGN OF MACHINE ELEMENTS-II

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Design a crane hook for 30kN crane. The hook is to be of swiveling type and of :
i) Triangular section ii) Circular section.
Choose the suitable values for the stresses.

2. a) Discuss the various types of power threads. Give at least two practical applications for each type. Discuss their advantages and disadvantages.
b) Show that the efficiency of the self locking screws is less than 50 percent.

3. A ball bearing subjected to a radial load of 4000N is expected to have a satisfactory life of 12000 hours at 720 r.p.m. with a reliability of 95%. Calculate the dynamic load carrying capacity of the bearing, so that it can be selected from manufacturer's catalogue based on 90% reliability. If there are four such bearing each with a reliability of 95% in a system, what is the reliability of the complete system?

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) Explain wedge film and squeeze film journal bearings.
b) Write short note on the lubricants used in sliding contact bearings.

6. a) What are the causes for the failure of the gear tooth?
b) What is the procedure followed in designing of spur gear?

7. a) Discuss the materials and practical applications for the various types of springs.
b) Explain what you understand by A.M. Wahl's factor and state its importance in the design of helical springs.

8. Derive the expression for the radius of neutral axis of a curved beam with:
i) Circular section
ii) T-section

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

DIGITAL 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 digital communication over analog communication?
b) Explain the sampling and quantization in the analog to digital conversion process.

2. a) Explain the delta modulation system and mention its drawbacks.
b) Derive the SNR in a PCM system.

3. a) Compare bandwidths and power spectra of PSK, FSK and ASK signals.
b) Describe the coherent FSK and PSK. Show that coherent PSK is superior to coherent FSK.

4. a) Explain the performance of optimum matched filter receiver.
b) Explain the calculation of error probabilities of ASK and QPSK.

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) Explain the following terms:
i) Capacity of a Gaussian channel.
ii) Channel capacity of discrete channel.
b) Explain Huffman coding with an example.

7. a) Describe the encoding and decoding of a cyclic code with neat diagram.
b) Consider a (5, 2) linear block code with a generator matrix

$$G = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 \\ 0 & 1 & 1 & 0 & 1 \end{bmatrix}$$

i) Calculate all code vectors in the code.
ii) Derive the parity check matrix.
iii) Find the minimum distance and error correcting capability.

8. a) Briefly explain Viterbi algorithm for decoding of convolutional codes.
b) What are convolution codes? How are they different from block codes?

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CODE No.:10BT60404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

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) Write a simple program in 8085 to sort a set of 8 bit numbers in an ascending order.
b) Explain the pin description of 8085 with a neat diagram.

2. Explain the memory segmentation in 8086 microprocessors.

3. a) Explain the instruction set of 8086.
b) Write an ALP to add two 8 bit numbers.

4. Explain the interfacing of a stepper motor with a processor.

5. Describe 8251 USART and interfacing with 8086 processor with neat diagrams.

6. a) Differentiate polling and handshaking policies.
b) Write a note on interrupt vector table.

7. Write an assembly language program for stepper motor control.

8. What are the different modes available in the operation of a programmable timer?

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

THEORY OF COMPUTATION

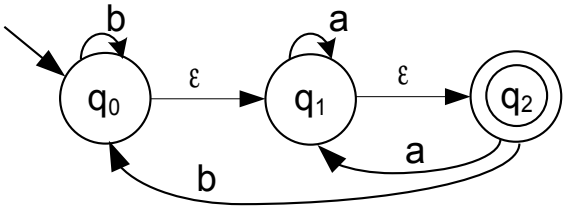
[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the transition diagram of a Finite State Automata that accepts the strings over {0,1}.
i) having odd number of 1's ii) having odd number of 0's and even number of 1's
b) Prove that for every NFA with Null moves, there exists a corresponding NFA without Null moves that accepts the same language.

2. Convert the following NFA with transitions to NFA without ε-transitions.



3. Construct Regular grammar G generating the regular set represented by a* b(a+b)*.

4. a) Convert the following Context Free Grammar to Push Down Automata
S→0A
A→0ABC | 1B | 0
B→ 1
b) Design push down automata for the language L={$a^n b^n$ /n≥1}.

5. a) What do you mean by ambiguity? Show that the grammar S → S/S, S → a is ambiguous.
b) Show that the grammar G with production
S → a/aAb/abSb
A→aAAb/bS is ambiguous.

6. a) Design PDA for the language L = {W C W^R / W E {a,b}*}.
b) Construct PDA equivalent to following grammar.
S → a A A
A → aS / bS / a

7. a) Discuss about any two types of Turing machines in detail.
b) Design a Turing machine that accepts the language L= { $0^n 1^n$ | n≥1}.

8. a) What is satisfiability problem? Explain.
b) What is undecidable problem? Discuss about any two such problems.

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CODE No.:10BT61201 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

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) Describe in detail about the conceptual model of Unified Modeling Language.
b) Give brief description about the role of inheritance in modeling.

2. a) Explain how to model the static and dynamic types.
b) How can we control the visibility of elements present in the package? Explain with example.

3. a) List and explain the common properties of a class diagram.
b) Explain how to model an object structure.

4. a) Explain interaction diagrams with one example.
b) Draw a sequence diagram for ATM withdrawal application.

5. a) Discuss in detail the Usecase Modelling along with example.
b) Discuss about UML Activity diagrams.

6. a) What area various parts of a transition? Explain briefly.
b) Define event and signal. What are the four kinds of events modeled by UML?

7. a) Give the Deployment diagram to model fully distributed system.
b) Write notes on Implementation diagrams.

8. Draw and explain the following diagram for point of sales system.
a) Sequence diagram b) Usecase diagram

CODE No.:10BT61202 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2018

COMPUTER NETWORKS

[Information Technology, Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about different types of networks.
b) Explain about various network topologies.

2. a) Explain mobile telephone system with neat diagram.
b) Write short notes on guided transmission media with neat diagram.

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. a) What is ALOHA? Differentiate between pure and slotted ALOHA.
b) Write the flowchart of CSMA.

5. What is Routing? Describe the Distance Vector and Link State Routing algorithms with suitable examples.

6. Explain TCP congestion control strategy.

7. Explain about Domain Name System (DNS).

8. Explain the connection establishment and basic architecture of 802.15.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Define managerial economics. Explain the relationship of managerial economics with other disciplines. 14 Marks

(OR)

2 What is meant by demand forecasting? Explain in brief the suitable methods of forecasting demand for the following: 14 Marks

i) Established products. ii) New products.

UNIT-II

3 Explain the cost-output relationship in the short run and in the long run. 14 Marks

(OR)

4 Explain various pricing methods and the objectives of pricing policy. 14 Marks

UNIT-III

5 Distinguish between: 14 Marks

i) Perfect Competition and Imperfect Competition.
ii) Monopoly and Monopolistic Competition.

(OR)

6 What are the necessary conditions for price discrimination? Under what conditions is price discrimination desirable and profitable? 14 Marks

UNIT-IV

7 What do you mean by Accounting? Explain the various Accounting concepts and conventions. 14 Marks

(OR)

8 For the following transactions, write the Journal entries in the books of Srisanth & Co. 14 Marks

Date	Particulars	Rs.
2013 Jan 1	Commenced business	70,000
Jan 2	Purchased goods from Ramesh	10,000
Jan 4	Purchased furniture	3,000
Jan 7	Sold goods to Rajesh	18,000
Jan 8	Paid wages	2,000
Jan 9	Paid office expenses	100
Jan 10	Goods purchased from Shyam	1,500
Jan 11	Received commission	200
Jan 14	Withdrew cash for personal use	500
Jan 24	Received cash from Ram	450
Jan 25	Cash withdrawn from bank	1,000
Jan 28	Cash deposited into bank	5,000
Jan 30	Interest paid	150

Jan 31	Rent paid	2,500

UNIT-V

9 What are the advantages and disadvantages in computerization of accounts? 14 Marks

(OR)

10 From the following trial balance of Mr. Sanker, prepare trading, profit and loss account for the year ending December 31, 2016 and a balance sheet as on that date: 14 Marks

	Dr. (Rs.)	**Cr. (Rs.)**
Purchases	32,000	-
Wages	13,000	-
Sales	-	60,000
Salaries	4,000	-
Traveling expenses	1,000	-
Carriage inwards	550	-
Insurance	300	-
Commission paid	650	-
Rent and rates	1,000	-
Cash in hand	350	-
Cash at bank	5,550	-
Repairs	600	-
Sundry expenses	110	-
Loans and advances	-	6,100
Buildings	8,000	-
Machinery	3,000	-
Furniture	1,000	-
Stock in hand (1.1.2016)	11,500	-
Capital	-	21,310
Sundry debtors	9,000	-
Sundry creditors	-	4,200
Total	91,610	91,610

Adjust the following:

1. Depreciate the following:
   - Building @10 % per annum.
   - Machinery @ 20 % per annum.
   - Furniture @ 15 % per annum.
2. Closing stock Rs. 12,000/-.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

ENTERPRENEURSHIP FOR MICRO SMALL AND MEDIUM ENTERPRISES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Describe the skills required for Entrepreneurship.	14 Marks
	(OR)	
2	Explain the functions of an Entrepreneur.	14 Marks

UNIT-II

3	What are the sources of business ideas? Explain the methods of idea generation.	14 Marks
	(OR)	
4	Write a brief note on labour problems in small scale industry in India. How do you overcome this problem, if you want to start a new business?	14 Marks

UNIT-III

5	Explain in brief the steps taken by Entrepreneurs to set-up a small-scale unit.	14 Marks
	(OR)	
6	What are the characteristics of micro and small enterprises?	14 Marks

UNIT-IV

7	Explain in detail the incentives and subsidies offered by Central Government to an Entrepreneur.	14 Marks
	(OR)	
8	Explain in brief the role played by commercial banks in supporting the enterprises.	14 Marks

UNIT-V

9	Explain the role of Rural Entrepreneurship Development in India.	14 Marks
	(OR)	
10	What are the problems of Rural Entrepreneurs? Discuss.	14 Marks

CODE No.:14BT40501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

COMPUTER ORGANIZATION

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Apply 2's complement binary division algorithm over -7/3 and show step by step calculations.	7 Marks
	b)	Develop a flow chart for binary division algorithm.	7 Marks
		(OR)	
2	a)	Compute square root for 172_{10} using binary square root algorithm.	7 Marks
	b)	Design one stage of arithmetic logic shift unit and show the function table.	7 Marks

UNIT-II

3	a)	Explain the instruction cycle highlighting the sub-cycles and sequence of steps to be followed.	7 Marks
	b)	Make a comparison between the hardwired control and micro programmed control. Is it possible to have a hardwired control associated with a control memory?	7 Marks
		(OR)	
4		What is the difference between the microprocessor and micro program? Is it possible to design a microprocessor without a micro program? Are all micro programmed computers also microprocessors?	14 Marks

UNIT-III

5	a)	How many characters per second can be transmitted over a 1200 baud line in each of the following modes? i) Synchronous serial transmission. ii) Asynchronous serial transmission with two stop bits. iii) Asynchronous serial transmission with one stop bits.	8 Marks
	b)	Design parallel priority interrupt hardware for a system with eight interrupts sources.	6 Marks
		(OR)	
6		What is the basic advantage of using interrupt-initiated data transfer over transfer under programmed control without an interrupt? Explain interrupt-initiated I/O in detail.	14 Marks

UNIT-IV

7	a)	Distinguish between Special and Temporal locality principles in cache memory.	7 Marks
	b)	List different types of Random Access Memories (RAM) and explain any one in detail.	7 Marks
		(OR)	
8	a)	Discuss in detail about secondary storage Optical Disks.	7 Marks
	b)	A cache has 4 sets and what would be the address of cache line to transfer 12 block main memory if the cache using direct mapping management technique?	7 Marks

UNIT-V

9 What are the reasons of pipeline conflicts in pipelined processor? Discuss the various conflicts that might arise in a pipeline. How are they resolved? 14 Marks

(OR)

10 a) Explain the parallel processing architecture and its uses. 8 Marks

b) Draw the diagram showing the structure of three-dimensional hyper-cube networks. List all the paths available from node 2 to node 4 that use the minimum number of intermediate nodes. 6 Marks

CODE No.:14BT40503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

DESIGN AND ANALYSIS OF ALGORITHMS

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Write algorithms to illustrate UNION and FIND operations on sets.	14 Marks
		(OR)	
2	a)	Write and explain the final algorithm for collapse Rule with an example.	7 Marks
	b)	Explain about various Asymptotic Notations.	7 Marks

UNIT-II

3		Write an algorithm for finding the strongly connected components of a Directed graph and also analyze its time complexity.	14 Marks
		(OR)	
4	a)	Explain when the Quick sort is preferred to Merge sort and vice versa.	7 Marks
	b)	What is the worst case search complexity of a binary search tree and why is it important to balance the binary search tree?	7 Marks

UNIT-III

5	a)	What is dynamic programming? Explain about the principle of Optimality.	7 Marks
	b)	Compare and contrast the difference between Greedy and Dynamic Programming methods.	7 Marks
		(OR)	
6		What is an optimal binary search tree? Write an algorithm to construct an optimal binary search tree using Dynamic Programming.	14 Marks

UNIT-IV

7	a)	Explain about Graph coloring with examples.	9 Marks
	b)	Explain the applications of Backtracking.	5 Marks
		(OR)	
8	a)	Write about Hamilton – Cycles.	7 Marks
	b)	Explain about FIFO Branch and Bound Solution.	7 Marks

UNIT-V

9		Write about Deterministic algorithms with an example.	14 Marks
		(OR)	
10		Compare NP-Hard and NP-Complete problems with appropriate examples.	14 Marks

CODE No.:14BT41201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

OBJECT ORIENTED PROGRAMMING

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write a java program to find the given number is Armstrong number or not.	7 Marks
	b)	Explain the concept of parameterized constructor with a suitable example.	7 Marks
		(OR)	
2	a)	Write a java program to find the factorial of the given number using recursive method.	7 Marks
	b)	Explain the various features of java language.	7 Marks

UNIT-II

3		Define inheritance and explain different kind of inheritance with a suitable example.	14 Marks
		(OR)	
4		Explain the various methods of implementing interfaces with a suitable example.	14 Marks

UNIT-III

5	a)	Explain array index out of bounds exception with an example.	7 Marks
	b)	Explain interthread communication in java and write code for producer consumer problem in java.	7 Marks
		(OR)	
6	a)	Explain try finally exception handling mechanism with an example program.	7 Marks
	b)	Explain **wait(), notify()** and **notifyAll()** with an example program.	7 Marks

UNIT-IV

7	a)	Define Event, Event Source and Event Listener and explain java event delegation model and advantage of event delegation model.	7 Marks
	b)	Write a java applet program to implement a simple calculator.	7 Marks
		(OR)	
8	a)	Explain mouse events with an example.	7 Marks
	b)	Write a java applet program to draw line, rectangle, oval and polygon on applet window.	7 Marks

UNIT-V

9	a)	Explain life cycle of a servlet.	7 Marks
	b)	Explain ServletContext.	7 Marks
		(OR)	
10	a)	Explain ResultSet with an example **jdbc** program.	7 Marks
	b)	Explain *javax.servlet.ServletRequest* and *javax.servlet.ServletResponse*.	7 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

COMPUTER NETWORKS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw with a neat sketch of TCP/IP reference model and explain.	7 Marks
	b)	Compare and contrast OSI and TCP/IP reference models.	7 Marks
		(OR)	
2	a)	Differentiate Coaxial cables and Twisted Pair cables.	7 Marks
	b)	Write short notes on 3G mobile phone networks.	7 Marks

UNIT-II

3	a)	Write short note on Piggy Backing.	6 Marks
	b)	Compare and contrast Selective repeat and Go Back-N sliding window protocols.	8 Marks
		(OR)	
4	a)	With a neat sketch, discuss about switching technologies used in Data Link Layer.	7 Marks
	b)	Explain the channel allocation performance with CSMA/CA protocol.	7 Marks

UNIT-III

5		Explain the process of computing a multicast spanning tree.	14 Marks
		(OR)	
6	a)	A token bucket scheme is used for traffic shaping. A new token is put into the bucket every 5μs. Each token is good for one short packet, which contains 48 bytes of data. What is the maximum sustainable data rate?	7 Marks
	b)	How is packet routing done for mobile hosts?	7 Marks

UNIT-IV

7		Explain three way handshake protocol with a neat sketch.	14 Marks
		(OR)	
8	a)	What are the design issues of Transport Layer?	7 Marks
	b)	How is flow control done in Transport Layer?	7 Marks

UNIT-V

9	a)	What is DNS server? Explain Domain Name System in internet.	7 Marks
	b)	Write short notes on World Wide Web.	7 Marks
		(OR)	
10		Define cryptography. With an example enumerate any two substitution techniques for encryption and decryption of a given data.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

COMPUTER NETWORKS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the types of network hardware by scale.	7 Marks
	b)	How does connection oriented services differ from connectionless services?	7 Marks
		(OR)	
2		Explain various types of guided transmission media.	14 Marks

UNIT-II

3	a)	Calculate the remainder obtained by dividing $\mathbf{x^7+x^5+1}$ by the generator polynomial $\mathbf{x^3+1}$?	7 Marks
	b)	Compare the performance of Pure and Slotted ALOHA at medium and high load.	7 Marks
		(OR)	
4	a)	A 12-bit Hamming code whose hexadecimal value is **0xE4F** arrives at a receiver. What was the original value in hexadecimal? Assume that not more than 1- bit is in error.	7 Marks
	b)	Analyse the performance of sliding window protocols using go-back-n and selective repeat with the help of an example.	7 Marks

UNIT-III

5	a)	Explain Dijkstra Shortest path routing algorithm with an example.	7 Marks
	b)	Differentiate Unicast and Multi-cast routing techniques.	7 Marks
		(OR)	
6	a)	Write short note on Tunneling.	6 Marks
	b)	Draw a neat sketch of **IPv6** address format and explain each field in it.	8 Marks

UNIT-IV

7		Explain Internet Protocol Version 4.	14 Marks
		(OR)	
8		Describe the importance of IMP, ARP, DHCP in network layer.	14 Marks

UNIT-V

9	a)	What is the role of SMTP to transfer mails between sender and receiver?	7 Marks
	b)	Write short notes on HTTP.	7 Marks
		(OR)	
10		Define cryptography. With an example enumerate any two transposition techniques for encryption and decryption of a data.	14 Marks

CODE No.:14BT60101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

REINFORCED CEMENT CONCRETE STRUCTURES – II

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Design a dog-legged staircase for a room of 4.2m wide. The height between floors is 3.6m. Use M20 concrete and Fe 415 steel. 14 Marks

(OR)

2 Design a dog-legged stair for a building in which the vertical distance between the floors is 3.6m. The Stair hall measures 2.4m x 5m (inner dimensions). The live load on the stair is 3000N/m^2. Adopt M20 Grade concrete and Fe415Grade Steel. 14 Marks

UNIT-II

3 Design a combined footing for the two columns at a multi-storey building. The columns of size 400 x 400mm transmit a working load of 400kN each and they are spaced at 5m centres. The safe bearing capacity of soil at site is 200kN/m^2. Adopt M20 and Fe415 steel. Sketch the details of reinforcement in the combined footing. 14 Marks

(OR)

4 A R.C column 400mm x 400mm carrying a load of 800kN is supported on three piles 400mm x 400mm in section. The centre to centre distance between the piles is 1.5m. Design a suitable pile cap. Use M20 concrete and Fe 415 steel. 14 Marks

UNIT-III

5 Describe the behaviour of the various elements of a counterfort retaining wall and write the design steps of this retaining wall. 14 Marks

(OR)

6 Design a cantilever retaining wall to retain earth with a backfill sloped at 20º to the horizontal. The top of the wall is 5m above the ground level and the foundation depth may be taken as 1.2m below ground level, with a safe bearing capacity of 130 kN/m^2. Assume that the backfill has a unit weight of 17 kN/m^2 and an angle of shearing resistance of 35º. Further, assume a coefficient of friction between soil and concrete, $\mu = 0.55$. Use M 20 concrete and Fe 415 steel. 14 Marks

UNIT-IV

7 Design a reinforcement concrete section for a circular water tank wall subjected to a hoop tension of 145 kN per metre height. The materials to be used are M30 grade concrete mix and Fe 250 grade plain steel bars. 14 Marks

(OR)

8 Design the roof dome and top ring beam of an overhead water tank of capacity 5 lakh litres. The material used are M25 concrete and Fe 415 HYSD steel. Draw reinforcement details. 14 Marks

UNIT-V

9 A concrete chimney of height 80m with external diameter of the shaft being 4m at top and 5m at bottom is required in a place where the wind intensity is 1.5 kN/m^2. Thickness of brick lining is 10cm. Temperature difference between inside and outside of the shaft is 75°C. Permissible bearing pressure on the soil is 150 kN/m^2. Adopt M25 grade concrete and for steel Fe415 and design the Base section of the chimney. Air gap = 100 mm, Coefficient of thermal expansion = 11 x 10^{-6} /°C. 14 Marks

(OR)

10 Design a silo for storing maize, having unit weight of 6870N/m^3. The silo has 6m internal diameter and the height of the cylindrical portion is 15m. The conical dome has a slope of 40^0 with horizontal and has an opening of 60cm diameter. Use Janssen's theory for $\mu = 0.521$ and $\mu' = 0.432$. Use M20 grade of concrete. 14 Marks

CODE No.:14BT60102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

FOUNDATION ENGINEERING

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain what is meant by disturbed and undisturbed samples. How the degree of disturbance is measured?	7 Marks
	b)	Write down the design considerations of open drive sampler.	7 Marks
		(OR)	
2	a)	Describe open excavation methods of exploration. What are their advantages and disadvantages?	7 Marks
	b)	Explain and discuss the various factors that help to decide the number and depth of bore holes required for subsoil exploration.	7 Marks

UNIT-II

3	a)	Distinguish between Coulomb's theory and Rankine's theory of earth pressure.	6 Marks
	b)	An L-shaped retaining wall is constructed to retain dry sand. The unit weight of sand is 17kN/m^3 and the angle of shearing resistance is 32^o. The base of the wall is placed 6m below the top of the level backfill. Thickness of the base and that of the stem is 0.4m. The base width is 3.5m. The angle of friction between the concrete and the foundation material can be taken as 20^o. Check the stability of the retaining wall against overturning and sliding.	8 Marks
		(OR)	
4	a)	Explain the Rebhann's graphical method for estimating active earth pressure.	10 Marks
	b)	What is the critical height of vertical excavation that can be made without any lateral support in a cohesive soil having γ = 18kN/m^3, cohesion = 14 kN/m^2 and angle of shearing resistance = 12^o.	4 Marks

UNIT-III

5	a)	Describe the method of slices for stability analysis of finite slopes.	8 Marks
	b)	Determine the factor of safety with respect to cohesion for a submerged embankment 25m high and having slope angle 45^o and soil properties c =40kN/m^2, φ = 10^o, γ_{sat} = 19kN/m^3. For φ = 10^o and slope angle 45^o, the stability number S_n = 0.108.	6 Marks
		(OR)	
6	a)	Discuss the method for checking the stability of an infinite slope in a cohesive soil. What is a critical height?	8 Marks
	b)	A 10m deep silty clay cut has an inclination of 45^o and the following soil properties: cohesion = 30 kPa, φ = 10^o, γ = 18 kN/m^3. Estimate the critical height of the slope in this soil.	6 Marks

UNIT-IV

7 a) Explain the Indian Standard code method of determination of net ultimate bearing capacity of shallow foundation. 7 Marks

b) A circular footing is resting on stiff saturated clay with unconfined compressive strength of 250kN/m^2. The depth of foundation is 2.0m. Determine the diameter of the footing if the column load is 600kN. Assume a factor of safety as 2.5. The bulk unit weight of soil is 19kN/m^3. 7 Marks

(OR)

8 a) Differentiate between Terzaghi's and Meyerhof's theories of bearing capacity. 8 Marks

b) A rectangular concrete foundation of 18m x 36m, exerts a pressure of 180kN/m^2 on a soil mass with E = 45MN/m^2. Determine the immediate settlement under the foundation. Poisson's ratio = 0.5 and influence factor = 1.0. 6 Marks

UNIT-V

9 a) Describe the pile load test and state its limitations. 9 Marks

b) A single acting steam hammer weighing 2500N and falling through a height of 1m drives a pile. The average penetration for the last few blows is 1cm. Using the ENR formula, determine the allowable load on the pile. 5 Marks

(OR)

10 a) What are the different shapes of well foundation? Explain their comparative merits and demerits. 7 Marks

b) Discuss different types of caissons. 7 Marks

CODE No.:14BT60103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

TRANSPORTATION ENGINEERING - I

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write the road length formulae of Lucknow plan.	7 Marks
	b)	Draw neat sketches of various Road patterns.	7 Marks
		(OR)	
2	a)	Derive an expression for taking Sight Distance.	7 Marks
	b)	Design the length of transition curve for the following data: Design Speed = 80KMPH Radius of Circular curve = 150m Super elevation = 0.07 Method of introducing super elevation= Centre is raised with respect of edges Allowable rate of introduction of super elevation = 1 in 120 Extra Widening = 1.25m Number of lane = 2 Type of terrain = Plain	7 Marks

UNIT-II

3	a)	What are the desirable properties of stone aggregate? Explain in detail.	7 Marks
	b)	List out various tests conducted on Bitumen. Explain anyone test in detail with neat sketches.	7 Marks
		(OR)	
4	a)	What are the requirements of Highway drainage? Explain in detail.	7 Marks
	b)	Write the steps in the design of Surface Drainage.	7 Marks

UNIT-III

5	a)	With the help a tabular form, explain the differences between Rigid and Flexible pavements.	7 Marks
	b)	Explain in detail about various methods of design of flexible pavement.	7 Marks
		(OR)	
6	a)	Determine the load stresses in rigid pavement based on the Westergard's stress equations and using the following data: Wheel load = 5100 kg; Tyre pressure = 7.5 kg/cm^2; Slab thickness = 30 cm; Elastic modulus of the concrete as 3 x 10^{5}kg/cm^2; Modulus of sub grade reaction = 8.0 kg/cm^3; radius of contact area = 15 cm; Poisson's ratio = 0.15	7 Marks
	b)	Design size and spacing of dowel bars at an expansion joint of concrete pavement of thickness 25cm. Given the radius of relative stiffness of 80cm. Design wheel load 5000 kg. Load capacity of the dowel system is 40% of design wheel load. Joint width is 2.0cm and the permissible stress in shear, bending and bearing	7 Marks

stress in dowel bars are 1000, 1400 and 100 kg/cm^2 respectively.

UNIT-IV

7	a)	With the help of neat sketches, explain the construction of expansion joint and contraction joint.	7 Marks
	b)	Write a brief note on bituminous pavement construction.	7 Marks
		(OR)	
8		Write in detail with the help of neat sketches: i) Trucks and Haulage equipment. ii) Scrappers.	14 Marks

UNIT-V

9	a)	Write the functions and requirements of sleepers and ballast in a railway track.	7 Marks
	b)	Draw a neat sketch of Right Hand Turnout.	7 Marks
		(OR)	
10	a)	What are various gradients used in Railway Track? Explain about the grade compensation.	7 Marks
	b)	What do you understand by wind rose diagram? Explain the types of wind rose diagram with the help of neat sketches.	7 Marks

CODE No.:14BT60107 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

GROUND WATER DEVELOPMENT AND MANAGEMENT

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Distinguish between: 8 Marks
i) Aquifer and aquifuge.
ii) Confined aquifer and water table aquifer.

b) Explain the terms Transmissivity and storativity. 6 Marks

(OR)

2 a) What are 'ground water flow contours'? What are their applications? 7 Marks

b) An artesian aquifer 30m thick has a porosity of 26% and elastic modulus of 0.26 GN/m^2. Estimate the storage coefficient of the aquifer. Bulk modulus of elasticity of water = 2.1 GN/m^2. 7 Marks

UNIT-II

3 a) Derive an expression for the steady state discharge of well fully penetrating into a confined aquifer. 7 Marks

b) In a water table aquifer of 50m thickness, a 20cm diameter well is pumped at a uniform rate of 0.05m^3/s. If the steady state drawdown measured in the observation wells located at 10m and 100m distances from the well are 6.5m and 0.25m respectively, determine the hydraulic conductivity of the aquifer. 7 Marks

(OR)

4 a) Explain with a neat sketch, the Cooper and Jacob method of determining the aquifer parameters. 7 Marks

b) What is yield of an open well? Explain how the yield of an open well can be determined. 7 Marks

UNIT-III

5 a) Describe practical methods to halt and abate sea water intrusion in coastal regions. 7 Marks

b) Explain about Occurrence of saline water intrusions and Shape of interface. 7 Marks

(OR)

6 Describe in detail, the recognition of seawater in ground water. 14 Marks

UNIT-IV

7 a) What are the different recharge methods? Briefly explain their merits. 7 Marks

b) How can GIS and Remote sensing be applied in the artificial recharge of ground water? 7 Marks

(OR)

8 a) Explain the various components of the flow diagram for management of a ground water basin. 7 Marks

b) What is 'conjunctive use'? Explain the ground water basin management by conjunctive use. 7 Marks

UNIT-V

9	What is the significance of Geophysical methods? Describe common electrode arrangements for resistivity determination with both Wenner and Schlumberger arrangement. Also, interpret the two layer electrical resistivity measurement from Schlumberger electrode spacing with neat sketches.	14 Marks

(OR)

10	How do you employ seismic method of exploration? Explain how the thickness of the layers can be estimated based on reflection and refraction of shock waves.	14 Marks

CODE No.:14BT60108 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

SOLID WASTE MANAGEMENT

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the various sources and types of solid wastes.	14 Marks
		(OR)	
2		Explain the effects of public health by improper disposal of solid wastes.	14 Marks

UNIT-II

3		Illustrate the process of on-site segregation of solid waste.	14 Marks
		(OR)	
4		Explain the type of storage method and the materials used for the storage container.	14 Marks

UNIT-III

5	a)	How do you make a decision on man power requirement for the collection of solid waste?	7 Marks
	b)	Classify the collection routes of solid waste.	7 Marks
		(OR)	
6	a)	Explain the transfer stations of solid waste.	7 Marks
	b)	Explain the collection options under Indian condition.	7 Marks

UNIT-IV

7	a)	Explain process of segregation and separation of solid waste.	7 Marks
	b)	Explain different process components and techniques involved in solid waste management.	7 Marks
		(OR)	
8	a)	What is transfer station? Explain the necessity of transfer station.	7 Marks
	b)	Explain Pyrolysis. What are different methods of Pyrolysis?	7 Marks

UNIT-V

9	a)	Explain the step by step procedure involved in site selection for sanitary landfills.	7 Marks
	b)	Describe the sanitary land filling process in detail with a neat sketch.	7 Marks
		(OR)	
10		What do you understand by the term leachate? What problems are posed by leachate and how would you overcome?	14 Marks

CODE No.:14BT60201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

MICROPROCESSORS AND MICROCONTROLLERS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain about memory segmentation and pipelining in 8086 microprocessor. 7 Marks

b) Write an 8086 assembly language program to find maximum number in a given series of 8-bit numbers. 82H, FFH, 23H, 48H, 9AH, CFH, 99H 7 Marks

(OR)

2 a) Discuss the following Data Transfer instructions. 7 Marks

i) IN ii) MOV iii) POP iv) XLAT
v) LAHF vi) OUT vii) LEA

b) Differentiate between procedures and macros. 7 Marks

UNIT-II

3 a) Discuss in detail about the interrupts structure of 8086. 7 Marks

b) Draw and explain the timing diagram of memory READ operation of 8086 microprocessor. 7 Marks

(OR)

4 a) Interface two 4K x 8 EPROMS and two 4K x 8 RAM chips with 8086. Select suitable maps. 10 Marks

b) Write the functions of the following pins of 8086. 4 Marks

i) RESET ii) NMI iii) $\overline{BHE}$ iv) $\overline{LOCK}$

UNIT-III

5 Interface ADC 0808 with 8086 using 8255 ports. Use Port A of 8255 for transferring digital data output of ADC to the CPU and Port C for control signals. Assume that an analog input is present at I/P of the ADC and a clock input of suitable frequency is available for ADC. Draw the schematic and write required ALP. 14 Marks

(OR)

6 a) Draw and discuss internal architecture of USART 8251. 7 Marks

b) Draw and discuss the architecture of 8257. 7 Marks

UNIT-IV

7 a) Write an assembly language program for 8051 microcontroller to generate Fibonacci series. 7 Marks

b) Read the following instructions and state whether each of the instruction is executable. If not, debug the instruction. 7 Marks

i) MOVA, @ r3 ii) ADD B, A
iii) MUL A, R1 iv) MOVC A, @R1+dptr

(OR)

8 a) Assume that 5 BCD data items are stored in RAM locations starting at 40H, as shown below. Write a program to find the sum of all the numbers. The result must be in BCD. 7 Marks

40h = (71)
41h = (11)
42h = (65)
43h = (59)
44h = (37)

b) Show the design of an 8051 based system with 8K bytes of program ROM and 8 K bytes of data ROM. 7 Marks

UNIT-V

9 a) Write an 8051 ALP to transfer the message "HELLO" serially at 9600 baud, 8-bit, 1 stop bit. 10 Marks

b) Discuss about various modes of operations of timer in 8051. 4 Marks

(OR)

10 a) Interface push button switches and LEDs to 8051 microcontroller. Give the suitable hardware and software details. 10 Marks

b) Discuss the advantages of microcontroller based system over microprocessor based systems. 4 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

POWER ELECTRONICS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the different modes of operation of MOSFET with the help of its static V-I characteristics.	7 Marks
	b)	Explain the four modes of operation of a TRIAC. Compare their sensitivity.	7 Marks
		(OR)	
2	a)	What is the need for series and parallel connection of SCRs? Explain with an example.	7 Marks
	b)	Explain the switching performance of BJT with relevant waveforms indicating clearly the turn on, turn off times and their components.	7 Marks

UNIT-II

3	a)	A single phase fully controlled bridge converter with RL load is supplied from 220V, 50 Hz ac supply. If the firing angle is 45^{o}, determine i) Average output voltage. ii) Displacement factor. iii) Input power factor. iv) Harmonic factor.	7 Marks
	b)	Explain the operation of a single phase fully controlled rectifier with resistive load.	7 Marks
		(OR)	
4		Explain the effect of source inductance in the operation of single phase fully controlled converter. Derive the expression for its output voltage.	14 Marks

UNIT-III

5		Describe the operation of single phase full wave AC voltage controller with the help of voltage and current waveform. Also derive the expression for average value of output voltage.	14 Marks
		(OR)	
6		Explain the principle of working of single phase to single phase step up Cycloconverter with waveforms. List the factors that affect the performance of Cycloconverter.	14 Marks

UNIT-IV

7	a)	Derive the expression for the output voltage of a step-up chopper and explain its control strategies.	7 Marks
	b)	With a neat sketch, explain the working principle of type B chopper.	7 Marks
		(OR)	
8		With a neat sketch, explain the working principle of type D chopper with relevant waveforms.	14 Marks

UNIT-V

9	a)	List various output voltage control methods of inverters.	4 Marks
	b)	Explain various pulse width modulation techniques employed for the voltage control of inverters.	10 Marks
		(OR)	
10		Explain the operation of 120˚ conduction mode three phase voltage source	14 Marks

inverter. Draw the waveforms of phase voltages and line voltages.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

SWITCHGEAR AND PROTECTION

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about sequence impedances and sequence networks of static equipment of power systems.	7 Marks
	b)	The line **b** of a 3-ph line feeding a balanced Y-load with neutral grounded is open resulting in line currents: $\mathbf{I_a = 10\angle 0^0}$ A and $\mathbf{I_c = 10\angle 120^0}$ A. Determine the sequence current components.	7 Marks
		(OR)	
2	a)	Derive an expression for fault current when a double line to ground fault occurs on the terminals of an unloaded alternator. Draw the connections of the sequence networks during fault.	7 Marks
	b)	A three phase 50 MVA, 11 kV generators is subjected to the various faults and the currents so obtained in each fault are: 2000 A for a three phase fault; 1800 A for a line-to-line fault and 2200 A for a line-to-ground fault. Find the sequence impedances of the generator.	7 Marks

UNIT-II

3	a)	What is meant by directional feature of a directional over current relay? Describe the construction, principle of operation and application of a directional over current relay.	7 Marks
	b)	Explain mertz prize differential protection.	7 Marks
		(OR)	
4	a)	Explain the advantages and disadvantages of microprocessor based relay over static relays.	7 Marks
	b)	Explain different types of distance relays and compare their merits and demerits.	7 Marks

UNIT-III

5	a)	Explain various types of faults that occur in an electrical generator.	7 Marks
	b)	Explain in detail the protective scheme for ground fault protection in the electrical generator.	7 Marks
		(OR)	
6	a)	Explain with a neat circuit diagram, the differential protection scheme used to protect star-delta transformers.	7 Marks
	b)	Describe with a neat sketch, the operation of Buchholz relay.	7 Marks

UNIT-IV

7	a)	Give the scheme of protection for a ring main having three substations and fed from one end.	7 Marks
	b)	Explain carrier current protection scheme for transmission lines.	7 Marks
		(OR)	
8	a)	Briefly describe about protection against lightning over voltages.	7 Marks
	b)	Explain insulation coordination and BIL in transmission systems.	7 Marks

UNIT-V

9 a) Explain the following terms with respect to a fuse. 7 Marks

i) Minimum fusing current ii) Rated current iii) Fusing factor
iv) Prospective current v) Cut-off current

b) Explain restriking phenomena in circuit breakers and derive an expression for rate of rise of restriking voltage. 7 Marks

(OR)

10 a) Explain the phenomenon of current chopping in a circuit breaker. What is the effect of current chopping on the circuit breaker as well as on the system? 7 Marks

b) What are the key features of SF6 circuit breaker in comparison with other circuit breakers? 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

DISTRIBUTION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the constant power and constant current loads by deriving the necessary equations.	7 Marks
	b)	Why loads are classified in distribution system and how they are classified? Describe their characteristics.	7 Marks
		(OR)	
2	a)	A 120 MW substation delivers 120 MW for 3 hours 60 MW for 8 hours and shut down for rest of each day. It is also shut down for the maintenance for 15 days each year. Calculate its annual load and annual loss factor.	8 Marks
	b)	Explain the following: i) Coincidence factor. ii) Contribution factor. iii) Loss factor.	6 Marks

UNIT-II

3	a)	Discuss the factors to be considered while designing the loop type distribution feeder.	7 Marks
	b)	Compare the radial, loop and ring main primary distribution systems on the basis of load, reliability of supply and economy.	7 Marks
		(OR)	
4		Show that power loss due to load currents of the two phase, 3 wire lateral with full capacity neutral is exactly equal to 2.25 times larger than the one in which equivalent three phase lateral is used. Also prove that VD pu 2Φ = 2.1 x VD pu 3Φ for the above system.	14 Marks

UNIT-III

5	a)	How do you fix the rating of a distribution substation? Explain.	7 Marks
	b)	Explain about different methods of neutral grounding.	7 Marks
		(OR)	
6	a)	Mention various factors that are to be considered in selecting ideal substations.	7 Marks
	b)	A 3-phase radial feeder has a voltage of 11kV at the receiving end. A total impedance of (5.5+j11) ohms/phase and the load of 5MW with a lagging p.f of 0.9. Find 3-phase line to line and phase voltage at the sending end, load angle and percentage voltage regulation.	7 Marks

UNIT-IV

7	a)	Explain the principle of operation of circuit breakers employed for distribution systems.	7 Marks
	b)	What is the need for coordination? Explain in detail.	7 Marks
		(OR)	

8	a)	Determine the ratio between power loss for a single phase 2 wire ungrounded and three phase systems.	7 Marks
	b)	Explain the coordination between fuse and circuit breaker with its characteristics.	7 Marks

UNIT-V

9	a)	Discuss why the voltage control is required in the distribution system.	7 Marks
	b)	Explain the procedure employed to determine the best capacitor location.	7 Marks

(OR)

10	a)	A 440V 3-phase distribution feeder having a load of 110KW at a lagging power factor and the load current of 200A. If it is desired to improve the power factor, determine the uncorrected power factor and the reactive load, the new corrected power factor after installing a shunt capacitor of 75KVAR.	8 Marks
	b)	Explain the economic justification of power factor correction.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

HIGH VOLTAGE ENGINEERING

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	How is the electrical stresses / electrical field intensity controlled?	7 Marks
	b)	List the insulating materials used in HV transformers.	7 Marks
		(OR)	
2	a)	What is the need for generating high voltages in laboratory?	7 Marks
	b)	Explain the concept of estimation and control of electric stresses.	7 Marks

UNIT-II

3	a)	What are commercial liquid dielectrics and how are they different from pure liquid dielectrics?	7 Marks
	b)	In an experiment for determining the breakdown strength of transformer oil, the following observations were made. Determine the power law dependence between the gap spacing and the applied voltage of the oil. Gap spacing (mm) 4 6 10 12; Breakdown Voltage (kV) 90 140 210 255.	7 Marks
		(OR)	
4	a)	What is thermal breakdown in solid dielectrics and how is it practically more significant than other mechanisms?	7 Marks
	b)	Solid specimen of dielectric has a dielectric constant of 4.2 and $\tan\delta = 0.001$ at a frequency of 50Hz. If it is subjected to an alternating field of 50kV/cm, calculate the heat generated in the specimen due to the dielectric loss.	7 Marks

UNIT-III

5	a)	Explain with diagrams, different types of rectifier circuits for producing high **dc** voltages.	7 Marks
	b)	A 12 stage impulse generator has 0.126μF condensers. The wave front and wave tail resistances connected are 800Ω and 5000Ω respectively. If the load condenser is 1000pF, find the front and tail times of the impulse wave produced.	7 Marks
		(OR)	
6		Why is a Cockcroft-Walton circuit preferred for voltage multiplier circuits? Explain its working with a schematic diagram.	14 Marks

UNIT-IV

7		Discuss the different methods of measuring high **dc** voltages. What are the limitations of each method?	14 Marks
		(OR)	
8		What are the different types of resistive shunts used for impulse current measurements? Discuss their characteristics and limitations.	14 Marks

UNIT-V

9		What is Wagner's earthing device? Explain how it is used for eliminating stray capacitances.	14 Marks
		(OR)	
10		Explain the power frequency and impulse voltage test conducted on bushings.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

DESIGN OF MACHINE ELEMENTS-II

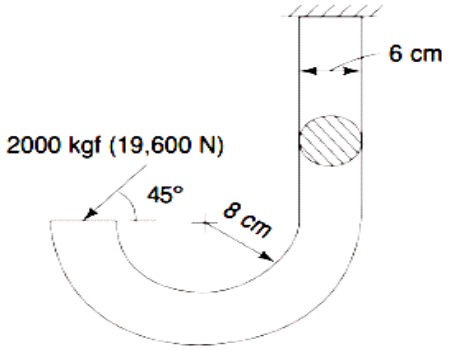
[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

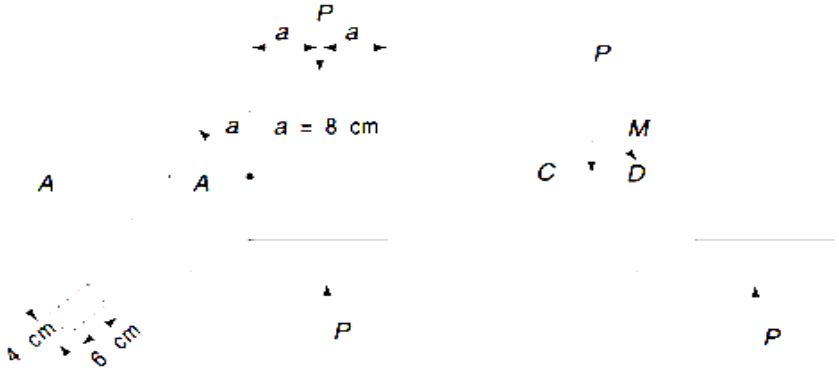
UNIT-I

1 Find the maximum tensile stress in the curved part of the hook shown in figure. 14 Marks



(OR)

2 Determine the maximum tensile and maximum compressive stresses across the Sec. AA of the member loaded as shown in figure. Load P = 2000 kgf(19620 N). 14 Marks



UNIT-II

3 a) Briefly explain the types of Journal bearings. 4 Marks

b) A bearing for a centrifugal pump has a diameter of 75mm and a length of 120mm. The journal is machined so as to give a radial clearance of 0.0015mm per mm radius. The journal rotates at 1440 r.p.m and carries a total load of 10 kN. Oil is supplied with a viscosity of 0.03 Pa-sec at the operating temperature. Determine the coefficient of friction, the actual value of the bearing characteristic number and the heat generated in kJ/min. 10 Marks

(OR)

4 a) Distinguish between bearing characteristic No.4 bearing modulus for journal bearings. 4 Marks

b) A steam turbine rotor is to run at 4000 r.p.m and is supported by bearings, having a diameter of 200mm and a length of 500mm. The bearing pressure is limited to 0.5 MPa of projected area. Assume the coefficient of friction as 0.008. Determine the amount of bearing cooling water required per min if the rise in temperature of circulating water is limited to 22^0C. 10 Marks

UNIT-III

5 A pair of spur gears, having 20° involute full depth teeth is to transmit 21 kW at 600 r.p.m of the pinion. Between the gears, the speed ratio is 3:1. The gear material is cast iron and that for pinion is steel. The allowable static stresses for gear and pinion are 90 MPa and 140 MPa respectively. Pinion has 18 number of teeth. Face width =10 module and the velocity factor C_v =4.5/(4.5+v), v being the pitch line velocity in m/s. Design gears and gears may be checked for wear. — 14 Marks

(OR)

6 Design a Helical drive with the following data. — 14 Marks
The helical angle = 30^0, The speed of the pinion = 1000 r.p.m. The pitch diameter of pinion = 90mm, The pitch diameter of gear = 270mm, Power = 15 KW.

UNIT-IV

7 a) Explain what you understand by A.M. Wahl's factor and state its importance in the design of helical springs. — 5 Marks

b) Design a concentric spring for an air craft engine valve to exert a maximum force of 5000N under a deflection of 40mm. Both the springs have same free length, solid length and are subjected to equal maximum shear stress of 850 MPa. The spring index for both the springs is 6. — 9 Marks

(OR)

8 a) Write short notes on leaf springs. — 5 Marks

b) A lift system is provided with cushion springs at the bottom of lift. The lift is free to fall. Springs are set in parallel. Specify the required number of springs if the lift has free fall of 1.5m from rest. Weight of lift = 30kN, Allowable deflection per spring = 370 mm, Number of active turns =15, Spring mean coil diameter =30 mm, Spring wire diameter = 30mm, Modulus of rigidity for spring = 80Gpa. — 9 Marks

UNIT-V

9 A 4 stroke IC engine has the following specifications. — 14 Marks
Brake power: 7.5 kW; Speed : 1000 r.p.m; Indicated mean effective pressure = 0.35 N/mm^2; Maximum Gas pressure = 3.5 N/mm^2; Mechanical Efficiency = 80%.
Determine:

i. The dimensions of the cylinder, if the length of stroke is 1.4 times the bore of the cylinder
ii. Wall thickness of the cylinder, if the hoop stress is 35 MPa.
iii. Thickness of the cylinder head and the size of studs when the permissible stresses for the cylinder head and stud materials are 45 MPa and 65 MPa respectively.

(OR)

10 Design a CI piston for single acting 4-stroke engine for the following specifications: — 14 Marks
Cylinder bore: 100mm; Stroke: 120mm;
Max. Gas pressure: 5N/mm^2 ; Break mean effective pressure = 0.65N/mm^2 ;
Fuel Consumption: 0.23Kg/kW/hr; Speed: 2200 r.p.m.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

OPERATIONS RESEARCH

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 A mining company owns two different mines that produces a given kind of ore in grades A, B and C. The mining company has contracted to provide a smelting plant 12 Tons of A, 8 Tons of B and 24 Tons of C grade ores per week. It costs the company Rs. 2,000/- per day to run the first mine and Rs. 1,600/- per day to run the second. In a day's operation the first mine delivers 6 Tons of A, 2 Tons of B and 4 Tons of C grade ores, whereas the other mine delivers 2 Tons of A and 6 Tons of C grade ores. How many days in a week each mine should be operated to fulfill the orders most economically? i) Formulate as an LPP. ii) Solve the above LPP problem. 14 Marks

(OR)

2 A farmer has to plant trees of two kinds, A and B, in a farm 4400sq.m in area. A tree requires at least 25sq.m and B tree require 40sq.m of land. The annual water requirement of A is 30 units and B is 15 units per tree, while at most 3300 units of water is available. It is also estimated that the ratio of the number of B trees to the number of A trees should not be less than **6/19** and not more than **17/8**. The return per tree from A trees is 15 times as much as B trees. What should be the number of each type so that the expected return is maximum? i) Formulate as an LPP. ii) Solve graphically. 14 Marks

UNIT-II

3 Solve the following transportation problem. Use North-West method for generating the initial basic feasible solution. 14 Marks

Demand / Factory	S_1	S_2	S_3	S_4	Supply
A	7	10	12	10	40
B	9	12	10	10	30
C	12	9	14	12	20
Requirement	25	15	30	10	

(OR)

4 a) State the reduction theorem and optimality theorem. Explain how are they used in the optimization of assignment problem. 7 Marks

b) A Solicitor firm employs typists on hourly piece-rate basis for their daily work. There are five typists and their charges and speeds are different. According to an earlier understanding only one job was given to one typist was paid for full hour even if he worked for a fraction of an hour. Find the least cost allocation for the following data. 7 Marks

Typist	Rate per hour(Rs.)	No. of Pages typed/hr
A	5	12
B	6	14
C	3	8
D	4	10
E	4	11

Job	No. of pages
P	199
Q	175
R	145
S	298
T	178

UNIT-III

5 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. 14 Marks

Activity	Preceding Activity	Time (Weeks)		Cost (000s)	
		Normal Program	Crash Program	Normal Program	Crash Program
A	-	2	1	20,000	20,700
B	-	3	1	29,000	33,000
C	A	2	1	25,000	26,100
D	B	4	3	47,000	47,750
E	C	4	2	55,000	57,000
F	C	3	2	29,000	29,500
G	D, E	5	3	79,000	80,800
H	F, G	2	1	15,000	17,900

(OR)

6 a) Explain the concept of Critical Path and explain how it is useful for the project planning. 4 Marks

b) A project being planned involved the following activities: 10 Marks

Activity	Predecessor	Duration (Days)
A	--	14
B	A	21
C	A	30
D	B	14
E	C,D	30
F	E	10

i) Construct the network.
ii) Determine expected project completion time.
iii) Determine free slack and total slack.

UNIT-IV

7 a) A department store has a single counter. During the rush hours, customers arrive at a rate of 24 per hour. The average number of customers that can be processed by the cashier at the counter is 36 per hour. Assume that the conditions for uses of the single-channel queuing model apply. 10 Marks

i) What is the probability that the counter is idle?
ii) What is the average number of customers in the queuing system?
iii) What is the average time a customer spends in the system?
iv) What is the average number of customers in the queue?
v) What is the average time a customer spends in the queue waiting?

b) What is traffic density in Queueing theory and describe with mathematical expression. 4 Marks

(OR)

8 a) Customers arrive at a Car-washing plant according to Poisson distribution with mean 2 per hour. Service time per customer is exponential with mean 25 minutes. The car space in front of the window, including that for the serviced can accommodate a maximum of 5 cars. Other cars can wait outside this space. (i) What is the probability that an arriving customer can drive directly to the space in front of the window? (ii) What is the probability that an arriving customer will have to wait outside the indicated space? (iii) How long is an arriving customer expected to wait before starting service? (iv) How many spaces should be provided in front of the window so that all the arriving customers can wait is front of the window at least 20% of the 10 Marks

time?

b) Explain Kendall's notations for representing queuing models. 4 Marks

UNIT-V

9 A toy company is bringing out a new type of toy. The company is attempting to decide whether to bring out a full, partial or minimal product line. The company has three levels of product acceptance and has estimated their probability of occurrence. Management will make its decision on the basis of maximizing the expected profit from the first year of production. The relevant data are shown in the following table: 14 Marks

		Product line		
Product acceptance	Probability	Full	Partial	Minimal
Good	0.2	80	70	50
Fair	0.4	50	45	40
Poor	04	-25	-10	0

i) What is the optimal product line and its expected profit?

ii) Develop an opportunity loss table and calculate the EOL values. What is optimal value of EOL and the optimal course of action?

(OR)

10 a) State the dominance rules used in games theory. 7 Marks

b) Obtain the optimal strategies for both persons and the value of the game for zero-sum two-person game whose payoff matrix is given as follows: 7 Marks

Player B	Player A					
	1	3	-1	4	2	-5
	-3	5	6	1	2	0

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

HEAT TRANSFER

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Derive general 3-D heat conduction equation in Cartesian coordinate system.	14 Marks

(OR)

2	a)	What is critical thickness of insulation for cylinder and explain its physical significance.	4 Marks
	b)	A steel pipe line with K = 50w/mK of inside diameter 100mm and outside diameter 110mm is to be covered with two layers of insulation each having a thickness of 50mm. The thermal conductivity of the first insulation material is 0.06W/mk and that of the second is 0.12W/mk. Calculate the loss of heat per metre length of pipe and the interface temperatures between the two layers of insulation when the temperature of the inside tube surface is 250^0C and that of outside surface of the insulation is 50^0C.	10 Marks

UNIT-II

3	a)	Explain how fins can increase the rate of heat transfer. Mention the most common types of fins and sketch them.	5 Marks
	b)	Calculate the rate of heat loss through the vertical walls of a boiler furnace of size 4m x 3m x 3m high. The walls are constructed from an inner fire brick wall 25cm thick of thermal conductivity 0.4W/m K, a layer of ceramic blanket insulation of thermal conductivity 0.2W/m K and 8cm thick, and a steel protective layer of thermal conductivity 55W/m K and 2mm thick. The inside temperature of the fire brick layer was measured at 600^0C and the temperature of the outside of the insulation 60^0C. Also find the interface temperature of layer**s.**	9 Marks

(OR)

4	a)	What are Heisler charts? Explain their significance in solving transient conduction problem.	5 Marks
	b)	A motor body is 360mm in diameter (outside) and 240mm long. Its surface temperature should not exceed 55^0C when dissipating 340W. Longitudinal fins of 15mm thickness and 40mm height are proposed. The convection coefficient is 40W/m^2 ^{0}C. Determine the number of fins required. Atmospheric temperature is 30^0C. Thermal conductivity = 40 W/m ^{0}C.	9 Marks

UNIT-III

5	a)	Explain the concept of velocity and thermal boundary layers.	5 Marks
	b)	A furnace door 1.5m high and 1m wide is insulated from inside and has an outer surface temperature of 70^0C. If the surrounding ambient air is at 30^0C, calculate the steady state heat loss from the door.	9 Marks

(OR)

6	a)	Does the roughness of tube surface affect the heat transfer in (i) laminar flow (ii) turbulent flow? Explain your answer.	6 Marks
	b)	Air at 20^0C and atmospheric pressure is flowing with a velocity 3m/s along the length of a plate, maintained at 60^0C. Calculate: i) Hydrodynamic boundary layer thickness at 20cm and 40cm from the leading edge by the approximate method. ii) Heat transferred from the first 40 cm of the plate.	8 Marks

UNIT-IV

7		A shell-and-tube heat exchanger with 2-shell passes and 8-tube passes is used to heat ethyl alcohol (C_p = 2670 J/kg ^{0}C) in the tubes from 25^0C to 70^0C at a rate of 2.1 kg/s. The heating is to be done by water (C_p = 4190 J/kg ^{0}C) that enters the shell at 95^0C and leaves at 60^0C. If the overall heat transfer coefficient is 800 W/m^2 ^{0}C, determine the heat transfer surface area of the heat exchanger using (i) LMTD method and (ii) effectiveness-NTU method.	14 Marks

(OR)

8	a)	Explain the Nusselt's theory of condensation on a vertical plate.	6 Marks
	b)	A metal-clad heating element is of 8mm diameter and of emissivity 0.95. The element is horizontally immersed in a water bath. The surface temperature of the metal is 260^0C under steady state boiling conditions. Calculate the power dissipation per unit length for the heater if water is exposed to atmospheric pressure and is at uniform temperature.	8 Marks

UNIT-V

9	a)	Define emissivity, absorptivity and reflectivity.	6 Marks
	b)	Two large parallel plates are kept at 1000^0C and 500^0C i) Determine heat radiated. ii) If the respective emissivities are 0.7 and 0.4, determine heat radiated.	8 Marks

(OR)

10	a)	Distinguish between: i) Black body and white body. ii) Absorptivity and emissivity of a surface.	7 Marks
	b)	Radiant energy with an intensity of 800W/m^2 strikes a flat plate normally. The absorptivity is twice the transmissivity and thrice the reflectivity. Determine the rate of absorption, transmission and reflection of energy.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

CAD/CAM

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the fundamentals of CAD process.	7 Marks
	b)	Describe the use of Graphics terminals.	7 Marks
		(OR)	
2	a)	Explain Plasma Panel Display Device.	7 Marks
	b)	Explain the applications of CAD/CAM.	7 Marks

UNIT-II

3	a)	What is meant homogeneous co-ordinates? Explain with an example.	7 Marks
	b)	What are synthetic curves? Explain any two of them.	7 Marks
		(OR)	
4		Explain line drawing algorithms using DDA and Bresenhams.	14 Marks

UNIT-III

5		Define Numerical Control. Explain the components of Numerical Control system.	14 Marks
		(OR)	
6		Briefly explain the two approaches in the Adaptive Control Machining system.	14 Marks

UNIT-IV

7	a)	What are the benefits of Group Technology?	7 Marks
	b)	Explain MICLASS methods in parts classification and coding system.	7 Marks
		(OR)	
8	a)	What are the benefits of Computer Aided Process Planning?	7 Marks
	b)	Briefly explain Automated Process Planning function.	7 Marks

UNIT-V

9	a)	What are the benefits of Computer Integrated Manufacturing?	7 Marks
	b)	Explain the functions of Computer in a CIM system.	7 Marks
		(OR)	
10	a)	Explain Non-contact Optical Inspection methods.	7 Marks
	b)	Briefly explain the integration of CAQC with CAD/CAM.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

DIGITAL SIGNAL PROCESSING

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) 1. If a system is described by the following difference equation, 7 Marks

$y(n) = y^2(n-1) - nx(x) + 5x(n-1) - 2x(n-2);\ n \geq 0$

i) Is the system linear? Explain.

ii) Is the system shift invariant? Explain.

b) Sketch the following signals. 7 Marks

i) $u(t) = u(t-2)$ ii) $\sin(wt)\, u(t-1)\, u(9-t)$

(OR)

2 Find the impulse response and step response of the discrete time linear time invariant system whose difference equation is given by, 14 Marks

$y(n) = y(n-1) + 0.5y(n-2) + x(n) + x(n-1)$

UNIT-II

3 a) The first five points of the eight-point DFT of a real and even sequence are X(k) = {5, 1, 0, 2, 3}. Determine the remaining three points. 9 Marks

b) State and prove duality property of DFT. 5 Marks

(OR)

4 Find the 8-point DFT of a sequence x(n) = (1,1,1,1,0,0,0,0) using DIT-FFT radix-2 algorithm. Also sketch magnitude and phase of DFT coefficients. 14 Marks

UNIT-III

5 To meet following frequency specifications find the filter orders of Butter worth and Chybychev. 14 Marks

$0.9 \leq |H(e^{j\omega})| \geq 1 \qquad 0 \leq \omega \leq 0.3\pi$

$|H(e^{j\omega})| \geq 0.2 \qquad 0.4\pi \leq \omega \leq \pi$

(OR)

6 a) Discuss the mapping s – domain to z – domain using forward difference method. 9 Marks

b) Convert given analog filter transfer function into digital filter transfer function using backward difference method. $H(s) = 1/(s^2 + 2)$ 5 Marks

UNIT-IV

7 a) What are the advantages of FIR filters over IIR filters? 5 Marks

b) Using rectangular window, design a linear phase FIR filter of order N = 24 to approximate the following ideal frequency response magnitude 9 Marks

$|H_d(e^{j\omega})| = 1 \qquad |\omega| \leq 0.2\pi$

$= 0 \qquad 0.2\pi \leq |\omega| \leq \pi$

(OR)

8 Design high-pass filter using Bartlett window with a cutoff frequency of 1.2 rad/sec and N = 9. Consider: 14 Marks

$H_d(e^{j\omega}) = e^{-j\alpha\omega} \qquad \omega_c \leq |\omega| \leq \pi$

= 0 otherwise

Find $H(e^{j\omega})$. Also realize designed filter.

UNIT-V

9 What are the factors that influence the selection of Digital Signal Processors (DSP's)? Explain about VLIW architecture and Pipeling used in programmable DSP's. 14 Marks

(OR)

10 a) Describe the on-chip peripherals connected to TMS320C6X CPU. 7 Marks

b) Write short notes on Multiply Accumulate Unit of programmable DSP's. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

MICROWAVE ENGINEERING

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the relationship between λ_g, λ_c and λ_0 in a waveguide.	7 Marks
	b)	A rectangular waveguide with dimensions 4 x 2cms operates for the TM_{11} mode at 10GHz .Determine the characteristics wave impedance.	7 Marks
		(OR)	
2	a)	What is Q-factor? Derive the expression for the quality factor, Q for rectangular cavity resonator.	7 Marks
	b)	The dimensions of a guide are 2.5cm x 1cm, the frequency is 8.6GHz. Find the following: i) Possible modes. ii) Cut-off frequency. iii) Guide wavelength.	7 Marks

UNIT-II

3		Write short notes on: i) Wave guide Irises. ii) Rat-Race hybrid tee. iii) Dielectric phase shifters.	14 Marks
		(OR)	
4	a)	What are ferrites and give their properties.	7 Marks
	b)	Calculate the coupling factor of the directional coupler when incident power is 600mW and power in the auxiliary wave guide is 350μW.	7 Marks

UNIT-III

5	a)	List the classification of microwave tubes. Differentiate between klystrons and TWT.	7 Marks
	b)	Explain how oscillations are generated in reflex klystron. How to calculate its electronic admittance?	7 Marks
		(OR)	
6	a)	Explain the principle of operation of two cavity klystron with neat diagrams.	7 Marks
	b)	Derive an expression for the power output and efficiency of a two cavity klystron.	7 Marks

UNIT-IV

7	a)	Explain the terms frequency pulling and frequency pushing with reference to Magnetron.	5 Marks
	b)	What is mode jumping in magnetrons and explain remedial measures to overcome it.	5 Marks
	c)	Compare the performance characteristics of TWT amplifier and Magnetron.	4 Marks
		(OR)	
8	a)	Explain Hatree conditions. Derive the voltage under this condition for linear magnetron.	7 Marks
	b)	A helical TWT has diameter of 2mm with 50 turns per cm. Calculate axial phase	7 Marks

velocity and the anode voltage at which the TWT can operated for useful gain.

UNIT-V

9	a)	Explain the operation of Gunn diode along with its V-I characteristics.	7 Marks
	b)	Give the microwave bench setup to measure wavelength of a given signal.	7 Marks
		(OR)	
10	a)	Explain the measurement procedure for Q-factor of a resonant cavity.	7 Marks
	b)	Explain in detail about RWH theory.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

VLSI DESIGN

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List the main steps carried in a typical N-WELL process and discuss briefly.	8 Marks
	b)	Determine **Zpu / Zpd** for NMOS inverter driven by another inverter.	6 Marks
		(OR)	
2	a)	Explain the working of an enhancement type NMOSFET transistor. Derive expressions for the drain to source current in the non-saturated and saturated regions of operation of an nMOS transistor.	8 Marks
	b)	How saturation current, power and delay are scaled in constant voltage scaling? State any one key problem in constant voltage scaling.	6 Marks

UNIT-II

3	a)	Discuss VLSI design flow of IC design process with the suitable figure.	6 Marks
	b)	Explain the p-well CMOS process.	8 Marks
		(OR)	
4	a)	Write about sheet resistance and area capacitance.	6 Marks
	b)	Evaluate the gate capacitance value of 5μm technology minimum size transistor with gate to channel capacitance value is $\mathbf{4 \times 10^{-4} pF/\mu m^2}$.	8 Marks

UNIT-III

5	a)	Design 16-bit carry bypass adder and discuss its features.	10 Marks
	b)	Describe important features of various adders.	4 Marks
		(OR)	
6	a)	Design a 4 x 4 array multiplier and write down the equation for the delay.	8 Marks
	b)	With neat diagram and equation, explain the principles of comparator.	6 Marks

UNIT-IV

7	a)	Explain in detail about FPGA architecture.	7 Marks
	b)	Design full adder using PLA.	7 Marks
		(OR)	
8		Discuss different FPGA architectures in detail.	14 Marks

UNIT-V

9		Write about;	
		i) Types of simulations.	5 Marks
		ii) VHDL synthesis.	5 Marks
		iii) Need for testing.	4 Marks
		(OR)	
10		Discuss different system level test techniques.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

TV AND RADAR ENGINEERING

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain key features of a composite video signal. Draw neat diagram in support of your answer.	7 Marks
	b)	What is kell factor? Explain importance of horizontal resolution and video band width in T.V.	7 Marks
		(OR)	
2	a)	Explain frequency interleaving.	7 Marks
	b)	Draw horizontal and vertical blanking pulses with details.	7 Marks

UNIT-II

3	a)	Explain how Y and colour difference signals are developed from R, G, B signals.	7 Marks
	b)	Draw colour television camera system with block diagram.	7 Marks
		(OR)	
4	a)	Compare the performance of NTSC, PAL and SECAM systems.	7 Marks
	b)	Explain the working of PAL encoder and decoder.	7 Marks

UNIT-III

5	a)	What are the technical advantages of using digital technology in TV systems?	7 Marks
	b)	What are the merits of digital technology?	7 Marks
		(OR)	
6	a)	Compute the minimum bit rate for 625/50 PAL system.	7 Marks
	b)	Explain MAC TV system features and advantages.	7 Marks

UNIT-IV

7	a)	Explain maximum unambiguous range using radar waveforms. Explain the applications of radar in detail.	7 Marks
	b)	A pulsed radar operating at 10 GHz has an antenna with a gain of 28dB and a transmitter power of 2kW (pulse power). If it is designed to detect a target with a cross section of $12m^2$ and the minimum detectable signal is -90dBm, what is the maximum range of the radar?	7 Marks
		(OR)	
8	a)	Explain the integration of radar pulses. Discuss about radar cross section of simple targets with neat sketches.	7 Marks
	b)	If a radar operates at a peak power of 50kW, pulse-width of 0.8ms and PRF of 1000Hz. Find duty cycle and average power.	7 Marks

UNIT-V

9	a)	Explain Noise Figure and Noise Temperature in radar receivers.	7 Marks
	b)	What are the various displays available in radar receivers and explain any one?	7 Marks
		(OR)	
10	a)	Explain Matched filter importance in radar receivers.	7 Marks
	b)	Explain the parameters on which radar range equation depends upon.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

PRINCIPLES OF COMMUNICATION

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Find the inverse Fourier Transform of i) sgn (ω) ii) u(ω).	9 Marks
	b)	Plot the convolution of a function f(t) with a pair of impulses.	5 Marks
		(OR)	
2	a)	Prove the Time shifting and Duality properties using Fourier Transform.	5 Marks
	b)	Find the highest value of auto correlation of a function f(t), where f(t) = 2cost +3cos3t + 4 sin4t.	9 Marks

UNIT-II

3	a)	Explain the square law detection of AM signals.	7 Marks
	b)	Compute the bandwidth requirement for the transmission of FM signal having a frequency deviation of 75 kHz and an audio bandwidth of 20kHz. What will be the change in the bandwidth, if modulating frequency is tripled? Determine the bandwidth when modulating signal amplitude is also tripled.	7 Marks
		(OR)	
4	a)	Explain clearly about pre-emphasis and de-emphasis in FM wave.	7 Marks
	b)	Explain the difference between DSB and SSB system.	7 Marks

UNIT-III

5	a)	The spectral range of a function extends from 10.0 MHz. Find the minimum sampling rate, the maximum sampling time.	9 Marks
	b)	Discuss about the generation of PPM.	5 Marks
		(OR)	
6	a)	Distinguish FDM and TDM. What do you mean by asynchronous multiplexing?	5 Marks
	b)	What is PWM? What other names does it have? With the help of a circuit diagram, explain PWM demodulation and its operation.	9 Marks

UNIT-IV

7	a)	Define and derive an expression for quantization error.	7 Marks
	b)	With the help a neat diagram, explain the transmitter and receiver of PCM.	7 Marks
		(OR)	
8	a)	24 Telephone channels, each band limited to 3.4 KHz are to be time division multiplexed by using PCM. Calculate the bandwidth of the PCM system for 128 quantization level and an 8KHz sampling frequency.	7 Marks
	b)	Discuss the principle of DPSK.	7 Marks

UNIT-V

9	a)	Define mutual information. State and prove the properties of it.	7 Marks
	b)	Explain the concept of Huffman coding technique by taking an example.	7 Marks
		(OR)	
10	a)	Explain the concept of error detection and correction using hamming codes.	7 Marks
	b)	Explain about code tree, trellis and state diagrams for a convolutional encoder.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

OBJECT ORIENTED ANALYSIS AND DESIGN

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define model and explain briefly about principles of good modeling.	7 Marks
	b)	What is Object Modeling? Explain about the elements of the Object Model.	7 Marks
		(OR)	
2	a)	What is UML? Explain how these concepts are used in building Complex Software Systems.	7 Marks
	b)	What are the common modeling techniques used in Structural Modeling? Explain.	7 Marks

UNIT-II

3	a)	Discuss briefly about classical analysis, domain analysis and behavioural analysis.	7 Marks
	b)	What do you mean by a class diagram? Explain how a class diagram represents logical design and structural design of a system.	7 Marks
		(OR)	
4	a)	Explain with an example, the modeling techniques used for writing class diagrams.	7 Marks
	b)	Explain with an example, how an object diagram is used to represent a scenario in the logical design of a system.	7 Marks

UNIT-III

5		Explain the sequence diagram and collaboration diagram and draw an example diagram for each one.	14 Marks
		(OR)	
6	a)	Define use case. State and explain different relationships that can be defined among use cases.	7 Marks
	b)	Draw the activity diagram for ATM transactions and explain.	7 Marks

UNIT-IV

7	a)	Discuss briefly with an example about the state machines in modeling life time of an object.	7 Marks
	b)	Draw state chart diagram and activity diagrams of simple chat system.	7 Marks
		(OR)	
8	a)	Discuss briefly about the behavioural modeling in forward and reverse engineering.	7 Marks
	b)	Explain with a suitable example behavioural modeling for a family of signals and exceptions.	7 Marks

UNIT-V

9	a)	What do you mean by software design and architecture? Discuss different steps involved in pipe and filter architectural model.	7 Marks
	b)	Explain about the deployment modeling processors and devices and API.	7 Marks
		(OR)	
10	a)	Explain the deployment diagrams for modeling a fully distributed system.	7 Marks
	b)	Explain the component diagrams for representing physical data base for a client-server system.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

WEB PROGRAMMING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the syntax and example for; i) **<CANVAS>** ii) **<MENU>** iii) **<SCRIPT>**.	6 Marks
	b)	List any five attributes used in INPUT element with their description.	8 Marks
		(OR)	
2	a)	How to define a multimedia file using the OBJECT element? Give an example.	7 Marks
	b)	What is cross-document messaging? Give an example.	7 Marks

UNIT-II

3	a)	Explore the backgrounds, fonts and text styles used in CSS with examples.	7 Marks
	b)	What are ***JavaScript*** functions? Write the description of at least five built-in global functions of ***JavaScript***.	7 Marks
		(OR)	
4	a)	State and explain various features and advantages of CSS3.	7 Marks
	b)	Write a ***JavaScript*** code that validates various elements of the student registration form.	7 Marks

UNIT-III

5	a)	State and explain the features of PHP.	5 Marks
	b)	Define functions in PHP. Write a recursive PHP program for payment schedule calculation.	9 Marks
		(OR)	
6	a)	What are expressions in PHP? Explain different types of operators used in PHP.	7 Marks
	b)	Explain how PHP supports object oriented programming features with examples.	7 Marks

UNIT-IV

7	a)	Demonstrate several challenges in while creating database driven web applications.	7 Marks
	b)	Explain the database transaction support using PHP.	7 Marks
		(OR)	
8	a)	Explain the creation of Cookies and Sessions in PHP.	7 Marks
	b)	Write about prepared statement in **mySQL**? Explain with suitable example.	7 Marks

UNIT-V

9	a)	Define XML schema. Show how an XML schema can be created.	7 Marks
	b)	Explain DOM and SAX.	7 Marks
		(OR)	
10		Explain the following terms related to XML. i) XML parsing. ii) XML browsers. iii) XML editors. iv) XML validators.	14 Marks

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CODE No.:14BT61204 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

CYBER SECURITY AND LAWS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the classifications of cyber crimes.	14 Marks
		(OR)	
2	a)	What is meant by cyber crime?	7 Marks
	b)	Explain the global perspective on cyber crime.	7 Marks

UNIT-II

3		Explain Key loggers and Spywares.	14 Marks
		(OR)	
4	a)	Write about password cracking.	7 Marks
	b)	What is Phishing?	7 Marks

UNIT-III

5	a)	Explain the following terms according to IT act 2000. i) Records as evidence. ii) Status of electronic. iii) Proof of electronic agreements.	6 Marks
	b)	What is a digital signature? Discuss the requirements to be fulfilled by digital signature application.	8 Marks
		(OR)	
6	a)	Explain different issues and challenges in cyber crime.	7 Marks
	b)	Discuss technology and students in India scenario.	7 Marks

UNIT-IV

7	a)	What are the needs for cyber security? Explain threats to security.	7 Marks
	b)	Write detail notes on Intellectual property, Cyber law and Copy right.	7 Marks
		(OR)	
8	a)	Discuss in detail about protecting people's privacy in organization.	7 Marks
	b)	Describe about incident handling and best practices.	7 Marks

UNIT-V

9		Explain mindset and skills of hackers and cyber criminals.	14 Marks
		(OR)	
10		Explain Bank and Credit Card related frauds.	14 Marks

CODE No.:14BT70501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2017

COMPILER DESIGN

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is a cross - compiler? Explain bootstrapping with an example.	7 Marks
	b)	What are different phases of compiler? Explain in detail with a neat sketch and showing outputs for each phase with the statement: position = initial + rate * 60.	7 Marks
		(OR)	
2	a)	Explain in detail Lex program structure along with an example.	7 Marks
	b)	Explain the input buffering scheme employed by the lexical analyzer with an example.	7 Marks

UNIT-II

3	a)	What is Left – factoring? Eliminate left – factoring for the grammar. S → iEtS / iEtSeS/a E → b.	7 Marks
	b)	Construct the predictive parser for the following grammar. S → (L) | a L → L , S | S	7 Marks
		(OR)	
4	a)	Parse the input string **int id, id;** using shift-reduce parser for the grammar. S → TL; T → int | float L → L,id | id	7 Marks
	b)	Define LR parser. Explain in brief about types of LR parsers.	7 Marks

UNIT-III

5	a)	What do you mean by Synthesized attribute and Inherited attribute? Give one example for each.	7 Marks
	b)	Discuss the procedure for overloading of functions and operators with suitable examples.	7 Marks
		(OR)	
6	a)	Explain in detail how an L-attributed grammar can be converted into a translate scheme.	8 Marks
	b)	Give the translate scheme to convert an expression grammar into three address code.	6 Marks

UNIT-IV

7	a)	Explain the implementation of a simple stack - allocation scheme.	6 Marks
	b)	What are the problems with implementing dynamic memory allocation in a compiled language? Explain.	8 Marks
		(OR)	
8	a)	Give the structure of a symbol table for the following 3 dimensional array. **ARRAY (-10; 20, N: M, O: M+L)**.	8 Marks
	b)	Compare Static and Stack storage allocation strategies.	6 Marks

UNIT-V

9 a) Construct basic blocks, data flow graph and identify loop invariant statements for the following: 7 Marks

```
for (i =1 to n)
{
j =1;
while (j <= n)
{
A = B*C/D;
j = j+1;
}
}
```

b) Explain various sources of loop optimization with suitable example. 7 Marks

(OR)

10 a) Explain how to generate code sequence using global register assignment. 7 Marks

b) What is a Peephole optimization? List the characteristics of Peephole optimization. 7 Marks

CODE No.:14BT6HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

BANKING AND INSURANCE

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Discuss the evolution of Indian Banking. Explain the various functions of a Bank.	14 Marks
	(OR)	
2	Discuss the monetary policy of RBI in detail.	14 Marks

UNIT-II

3	Outline the various types of accounts in Banking system. Explain the procedure for opening and closing of an account.	14 Marks
	(OR)	
4	Discuss the various products and services available to the customers from Indian banking.	14 Marks

UNIT-III

5	List out features of electronic payment system. Explain its types.	14 Marks
	(OR)	
6	Discuss briefly about business models.	14 Marks

UNIT-IV

7	What do you mean by insurance? Explain the advantages and disadvantages of insurance.	14 Marks
	(OR)	
8	Explain the history and growth of insurance business before and after nationalization.	14 Marks

UNIT-V

9	Explain the nature, elements of insurance contract in India.	14 Marks
	(OR)	
10	Discuss the role of insurance in national economy.	14 Marks

CODE No.:14BT41501 SVEC-14 (RA)

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

COMPUTER GRAPHICS

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Differentiate raster scan systems and random scan systems.	7 Marks
	b)	Discuss in detail the components of a CRT device.	7 Marks
		(OR)	
2	a)	What is the use of decision parameter in Bresenham line generation? Derive it.	7 Marks
	b)	Compare and contrast boundary fill and flood fill algorithms.	7 Marks

UNIT-II

3	a)	Derive the rotation matrix with respect to fix point Q(h,k).	9 Marks
	b)	Show that two dimensional scaling and rotation do not commutative under what condition they are commutative.	5 Marks
		(OR)	
4	a)	Describe Cohen-Sutherland algorithm with suitable example.	7 Marks
	b)	Derive two dimensional viewing transformations.	7 Marks

UNIT-III

5	a)	Describe the Spline representations.	8 Marks
	b)	List the properties of Bezier curve.	6 Marks
		(OR)	
6		Explain the procedure for Bezier and B-Spline surfaces.	14 Marks

UNIT-IV

7	a)	Discuss in detail rotation in 3D transformations.	7 Marks
	b)	Derive a transformation matrix to transform from world coordinates to viewing coordinates in 3D.	7 Marks
		(OR)	
8	a)	Illustrate the process of general parallel projection transformation.	7 Marks
	b)	Write short notes on clipping in 3D.	7 Marks

UNIT-V

9	a)	Compare and contrast z-buffer method and A-buffer method.	7 Marks
	b)	Illustrate the process involved in depth sorting method.	7 Marks
		(OR)	
10	a)	Explain in detail area sub-division method.	7 Marks
	b)	Differentiate Gouraud shading and Phong shading.	7 Marks

CODE No.:14BT41501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

COMPUTER GRAPHICS

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Differentiate raster scan systems and random scan systems.	7 Marks
	b)	Discuss in detail the components of a CRT device.	7 Marks
		(OR)	
2	a)	What is the use of decision parameter in Bresenham line generation? Derive it.	7 Marks
	b)	Compare and contrast boundary fill and flood fill algorithms.	7 Marks

UNIT-II

3	a)	Explain the inverse transformation. Derive the matrix for inverse transformation.	7 Marks
	b)	Interpret the composite transformations of an object? Generate matrix representations of those transformations.	7 Marks
		(OR)	
4	a)	Demonstrate Viewing pipeline with a coordinate reference frame.	7 Marks
	b)	Explain the procedure for writing Sutherland-Hodgeman algorithm with a neat labeled diagram and explain it with an example.	7 Marks

UNIT-III

5	a)	Discuss in detail Spline representation.	7 Marks
	b)	Write a short note on Quadric surfaces.	7 Marks
		(OR)	
6		Explain in detail Bezier curves and Bezier surfaces.	14 Marks

UNIT-IV

7	a)	Obtain the Transformation matrix for rotation about the line joining the points (0, 0, 0) an (1, 1, 1) with the angle of rotation 45^0 in counter-clockwise direction.	9 Marks
	b)	Describe the 3-D Viewing pipe line.	5 Marks
		(OR)	
8	a)	Derive the general parallel projection transformation matrices on XY plane.	8 Marks
	b)	Explain various types of projections.	6 Marks

UNIT-V

9	a)	Illustrate the back-face detection method.	7 Marks
	b)	Explain in detail depth sorting.	7 Marks
		(OR)	
10	a)	What is area sub-division method? Explain in detail.	7 Marks
	b)	Write short note on Phong shading.	7 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

COMPUTER NETWORKS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the importance of layered architecture.	7 Marks
	b)	Explain about the components if data communication.	7 Marks
		(OR)	
2	a)	Explain the functionality of OSI layers in detail.	7 Marks
	b)	Describe the merits of TCP / IP protocol suite over OSI model.	7 Marks

UNIT-II

3	a)	Write short notes on error correcting and detecting codes.	7 Marks
	b)	Write short notes on Elementary data link protocols.	7 Marks
		(OR)	
4	a)	How CSMA is useful in flow control? Explain in detail.	7 Marks
	b)	Write short notes on DLL switching.	7 Marks

UNIT-III

5	a)	Explain any Static Routing algorithm.	5 Marks
	b)	Describe Congestion Control algorithms.	9 Marks
		(OR)	
6	a)	Write short notes on Quality of Service.	5 Marks
	b)	Illustrate Distance Vector Routing algorithm with relevant figures.	9 Marks

UNIT-IV

7	a)	What are the services the transport layer provides? Discuss each in detail with the suitable example.	8 Marks
	b)	Explain various fields in TCP header and UDP header with neat diagram.	6 Marks
		(OR)	
8	a)	Explain connection establishment in Transport Protocol.	8 Marks
	b)	When does TCP trigger packet retransmission? Explain.	6 Marks

UNIT-V

9	a)	Write about web based E-Mail application and its related protocols.	6 Marks
	b)	Explain semantics of various fields in DNS message.	8 Marks
		(OR)	
10	a)	Explain about Substitution techniques with examples.	6 Marks
	b)	Write short notes on: i) Public Key cryptography ii) Private Key Cryptography	8 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

COMPUTER NETWORKS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write short notes on uses of computer networks.	5 Marks
	b)	Explain TCP/IP reference model in detail.	9 Marks
		(OR)	
2	a)	Explain Network Hardware with relevant figures.	9 Marks
	b)	Describe Wireless Transmission.	5 Marks

UNIT-II

3	a)	What is the need for Manchester encoding? Write down its limitations.	6 Marks
	b)	Compare and contrast Stop-and-Wait and Sliding window protocols.	8 Marks
		(OR)	
4	a)	With an example, explain the error detection method using parity checks.	8 Marks
	b)	Write the algorithm for computing the checksum.	6 Marks

UNIT-III

5	a)	Describe the concept of Link state routing.	7 Marks
	b)	Define congestion. Explain different congestion control algorithms.	7 Marks
		(OR)	
6	a)	How optimality principle achieved in shortest path routing?	7 Marks
	b)	Differentiate IP V4 and IP V6.	7 Marks

UNIT-IV

7	a)	Describe Berkeley sockets.	5 Marks
	b)	Explain elements of Transport Protocols.	9 Marks
		(OR)	
8	a)	Write short notes on Remote Procedure Call.	5 Marks
	b)	Explain about TCP segment header and TCP connection establishment.	9 Marks

UNIT-V

9	a)	Write about web based E-Mail application and its related protocols.	6 Marks
	b)	Explain semantics of various fields in DNS message.	8 Marks
		(OR)	
10	a)	Explain about Substitution techniques with examples.	6 Marks
	b)	Write short notes on: i) Public key cryptography; ii) Private key cryptography.	8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

OPERATING SYSTEMS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about operating system structure.	7 Marks
	b)	Compare the difference between sequential processing and batch processing.	7 Marks
		(OR)	
2		Discuss any two scheduling algorithms with examples.	14 Marks

UNIT-II

3	a)	Illustrate reader's-writer's problem and give a solution to it using semaphores.	7 Marks
	b)	Discuss monitor solution for dining-philosopher's problem.	7 Marks
		(OR)	
4	a)	Outline the procedure for deadlock recovery.	7 Marks
	b)	Describe any one method for handling deadlock.	7 Marks

UNIT-III

5	a)	Differentiate Paging and Segmentation.	6 Marks
	b)	Write in detail about non-contiguous memory allocation.	8 Marks
		(OR)	
6	a)	What is demand paging? Explain its concept.	5 Marks
	b)	Describe Page Replacement algorithms with an example.	9 Marks

UNIT-IV

7	a)	Explain the concept of file directory structures.	6 Marks
	b)	Discuss in detail about various file access methods.	8 Marks
		(OR)	
8	a)	Explain the concept of Swap-Space Management.	6 Marks
	b)	Explain in detail about the following disk scheduling algorithms with examples i) FCFS ii) SSTF iii) SCAN iv) LOOK	8 Marks

UNIT-V

9		Define kernel. Discuss in detail about kernel I/O sub system.	14 Marks
		(OR)	
10	a)	Summarize on goals and principals of protection.	7 Marks
	b)	Write short notes on domain of protection.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

ADVANCED CONTROL SYSTEMS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) What is lead compensator? Obtain the transfer function for a lead compensator and draw the pole zero plot. 7 Marks

b) Consider an unity feedback system with open loop transfer function $G(s) = \frac{10}{s(s+3)}$. Design a PD controller with a damping ratio 0.6 and natural frequency of oscillations 4 rad/sec. 7 Marks

(OR)

2 a) Explain the design procedure for P, PI, PID controllers using root locus technique. 7 Marks

b) Consider a unity feedback system with $G(s) = \frac{60}{(s+2)(s+3)(s+6)}$. Design a PID controller to satisfy the following specifications. 7 Marks

i) $K_v \geq 10$; ii) Damping ratio = 0.6; iii) ω_n=2 rad/sec.

UNIT-II

3 a) Find the singular points for the following system $\ddot{x} + 2\dot{x} + 5x = 0$. 7 Marks

b) Explain the procedure for constructing phase plane trajectory using delta method. 7 Marks

(OR)

4 a) Derive the describing function for saturation non-linearity. 7 Marks

b) Explain the stability analysis of nonlinear systems using describing function analysis. 7 Marks

UNIT-III

5 a) State and explain Lyapunov stability analysis of control system. 8 Marks

b) Check the positive definite for given quadratic form as follows: 6 Marks

$$Q = x_1^2 + 4x_2^2 + x_3^2 + 2x_1x_2 - 6x_2x_3 - 2x_1x_3$$

(OR)

6 a) What are the sufficient conditions of Lyapunov stability? 6 Marks

b) Test the stability of the system described by 8 Marks

$$\dot{x}_1 = -2x_1 + 5x_1^2x_2$$

$$\dot{x}_2 = -3x_2$$

Determine the region of asymptotic stability using Krasovskii method.

UNIT-IV

7 Consider a linear control system described by the transfer function as given below $G(s) = \frac{10}{s(s+1)(s+2)}$. 14 Marks

Design a feedback controller with state feedback so that the closed loop poles are placed at $-2, -1 \pm j1$.

(OR)

8 a) A single input single output control system is described by below state equation 7 Marks

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \\ \dot{x}_3 \end{bmatrix} = \begin{bmatrix} -1 & 0 & 0 \\ 1 & -2 & 1 \\ 2 & 1 & -3 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 10 \\ 1 \\ 0 \end{bmatrix} [n]$$

Design a state feedback controller which will give closed loop poles at $-1 \pm j2, -6$.

b) Explain the procedure for designing a full order observer and represent the block diagram for a system with full order observer. 7 Marks

UNIT-V

9 a) Write about the Euler lagrangine equation? 7 Marks

b) Find the extremals for the functional 7 Marks

$$f(x) = \int_0^2 [\dot{x}^2(t) + 2x(t)\dot{x}(t) + 4x^2(t)]\, dt, x(0) = 1, x(2) = \text{free}$$

(OR)

10 a) What are the steps involved in solution of an optimal control problem? 7 Marks

b) Describe the constrained minimization and minimum principle. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

DIGITAL SIGNAL PROCESSING

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Consider a discrete-time system with input x(n) and output y(n) related by 8 Marks

$y(n) = \sum_{k=n-n_0}^{n+n_0} x(k)$ where n_0 is positive integer.

i) Is the system linear?
ii) Is this system time-invariant?
iii) If x(n) is known to be bounded by a finite integer B_x , it can be shown that y(n) is bounded by a finite number C. We conclude that the given system is stable. Express C in terms of B_x and n_0.

b) Determine the response $y(n), n \geq 0$ of the system described by the second order difference equation $y(n) - 0.2y(n-1) - 0.03y(n-2) = x(n) + 0.4x(n-1)$, Where the input signal is $x(n) = 0.2^n u(n)$ and with initial conditions $y(-2) = 0, y(-1) = 0.5$. 6 Marks

(OR)

2 a) The system $y(n)=\text{sgn}[x(n)]$ have input x(n) and output y(n). Determine whether it is memory less, stable, causal, linear, time-invariant or not. 7 Marks

b) Determine the range of values of "p" and "q" for the stability of LTI system with impulse response $h(n)= p^n; n<0$ $= q^n; n\geq 0$. 7 Marks

UNIT-II

3 a) Why DFT is preferred over DTFT? 2 Marks

b) Explain the need of zero padding in DFT Sequence. Compute the 8-point of DFT of the following sequence $x(n) = \{1, 1, 1, 1, 0, 0, 0, 0\}$. 5 Marks

c) By using DFT properties solve the following. 7 Marks
The even samples of the 11-pint DFT of a length-11 real sequence are given by $x(0) = 4$; $x(2)=-1 + 3j$; $x(4) = 2 + j5$; $x(6) = 9-j6$; $x(8)= -5-j8$; $x(10) = \sqrt{3}-j2$.
Determine the missing odd samples of the DFT.

(OR)

4 a) Compute the 8-point DFT of the sequence $x(n)=\cos(n\,\pi/2)$ using the DIT-FFT algorithm. Show all intermediate results. 7 Marks

b) Explain the need to go for FFT rather than DFT. 2 Marks

c) Find the inverse FFT of the given $x(k)=\{1, 2, 3, 4\}$ using DIF algorithm. 5 Marks

UNIT-III

5 a) Design a Bandstop type-1 Chebyshev filter to meet the following specification: Pass band: 100 - 600Hz, 20dB attenuation at 200 - 400Hz Pass band ripple 1.1dB. 9 Marks

b) Compare the Chebyshev and Butterworth filters of IIR filter design. 5 Marks

(OR)

6 a) Discuss Impulse invariant method of deriving IIR filter from the corresponding analog filter. 5 Marks

b) Design an analog Butterworth filter to satisfy the given specifications: α_p=3dB, Ω_p=1000 rad/sec, α_s=15dB and Ω_s=500 rad/sec. 9 Marks

UNIT-IV

7 a) Design a linear phase FIR low pass filter using rectangular window with a cut off frequency $\omega_c = 0.2\pi$ rad/sample by taking 7samples of window sequence. 7 Marks

b) What is the drawback in FIR filter design using windows and frequency sampling method? How is it overcome? 7 Marks

(OR)

8 a) Design and linear – phase FIR LPF with the following desired frequency response using a Hamming window. $H_d(e^{j\omega}) = \begin{cases} e^{-j2\omega} & \text{for } 0 \le |\omega| \le \frac{\pi}{4} \\ 0 & \text{for } \frac{\pi}{4} \le |\omega| \le \pi \end{cases}$. 8 Marks

b) Compare the characteristics of rectangular, bartlet, hanning window with neat sketches. 6 Marks

UNIT-V

9 a) Explain the following addressing modes with examples. 8 Marks

i) Immediate Addressing.
ii) Memory-Direct Addressing.
iii) Bit-Reversed Addressing.
iv) Circular Addressing.

b) Explain the concept of pipelining and mention its importance in DSP processors. 6 Marks

(OR)

10 a) Explain about MAC in detail. 7 Marks

b) Explain the VLSI architecture and discuss its advantages and disadvantages. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

VLSI DESIGN

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

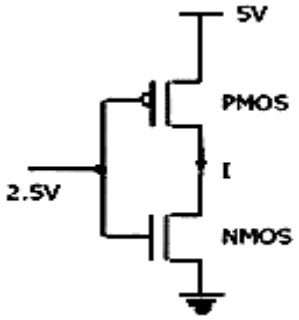
1 a) Elucidate the steps involved in CMOS fabrication using p-well process with neat sketches. 7 Marks

b) Determine Pull-up to Pull-Down ratio for an NMOS inverter driven by another NMOS inverter. 7 Marks

(OR)

2 a) Derive the expression for drain current in cutoff, saturation and non-saturation region for NMOS transistor. 7 Marks

b) In the CMOS inverter circuit shown, if the transconductance parameters of the NMOS and PMOS transistors are $K_n = K_p = \mu_n C_{ox}(W_n/L_n) = \mu_n C_{ox}(W_n/L_n) = 40\ \mu A/V^2$ and threshold voltages are $V_{tn} = -V_{tp} = 1$ volt. Find the current I. 7 Marks



UNIT-II

3 a) Sketch the transistor level diagram for the given expression and also get the corresponding Stick diagram representation in CMOS logic $Y = A\ (B + C) + D$. 10 Marks

b) Sketch the stick diagram for 2 input nMOS NOR gate. 4 Marks

(OR)

4 a) Describe three sources of wiring capacitances. Discuss the wiring capacitance on the performance of a VLSI circuit. 8 Marks

b) Define constant voltage scaling. Give necessary equations. 6 Marks

UNIT-III

5 a) Explain the Carry Look Ahead Adder with an example. 8 Marks

b) Explain about LFSR. 6 Marks

(OR)

6 a) Design the Booth Multiplier for A = 1001 and B = 1001. 8 Marks

b) Explain about comparators. 6 Marks

UNIT-IV

7	a)	Explain about Internal ROM Structure and give an example.	6 Marks
	b)	Draw the diagram for 6 Transistor SRAM and explain the operation.	8 Marks
		(OR)	
8	a)	Design a circuit for $X = \{1, 3, 5, 11, 13\}$ and $Y = \{1, 2, 10, 12\}$ by using PLA.	8 Marks
	b)	Explain the Standard cell design methodology with an example.	6 Marks

UNIT-V

9	a)	What is the need of testing? Explain different categories of tests.	7 Marks
	b)	How to test a chip after fabrication and explain in detail.	7 Marks
		(OR)	
10	a)	Explain, with the help of an example, how a board-level design can be equipped with the boundary scan feature.	7 Marks
	b)	What is the purpose of manufacturing test? Use different fault models to know the existence of good and bad parts and explain.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

PRINCIPLES OF COMMUNICATION

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Differentiate analog pulse and digital signals with proper examples.	8 Marks
	b)	Find the Fourier transform of a single valued exponential function $e^{-bt}u(t)$ and draw the spectrum where $u(t)$ is the unit step function.	6 Marks

(OR)

2	a)	Define and derive the properties of power spectral density.	7 Marks
	b)	Find the time autocorrelation function of the signal $g(t) = e^{-at}u(t)$ and from this obtain the power spectral density of the given signal.	7 Marks

UNIT-II

3	a)	For an FM modulator with a modulating signal m(t)= V_m sin300ωt, the carrier Signal $V_c(t) = 8\sin(6.5\times10^6)t$ and the modulator index β = 2. Find out the significant side frequencies and their amplitudes.	7 Marks
	b)	Prove that narrowband FM offers no improvement in SNR over AM.	7 Marks

(OR)

4	a)	Prove that the balanced modulator produces an output consisting of sidebands only with the carrier removed.	7 Marks
	b)	Explain the principle of coherent detector of DSB-SC modulated more with a neat block diagram.	7 Marks

UNIT-III

5	a)	What are FDM And TDM? Compare both of them.	8 Marks
	b)	Explain cross talk in PAM due to HF and LF limitations of the channel. Which of these two affects more than one channel and mention the reasons?	6 Marks

(OR)

6	a)	Explain natural sampling and flat top sampling and compare these two.	8 Marks
	b)	Two signals are band limited to 3 and 5 kHz, and are to be time division multiplexed. Find the maximum possible interval between two successive samples.	6 Marks

UNIT-IV

7	a)	Derive the expression for probability of error of PSK.	8 Marks
	b)	Compare DM, PCM and ADM.	6 Marks

(OR)

8	a)	Derive the expression for probability of error of QPSK.	8 Marks
	b)	Write short notes on modems.	6 Marks

UNIT-V

9	a)	Apply Shannon Fano coding for the 5 messages with probabilities 0.4, 0.15, 0.15, 0.15, 0.15 and find the coding efficiency.	10 Marks
	b)	List the advantages and disadvantages of convolutional code.	4 Marks

(OR)

10	a)	An analog signal band limited to 10HKz quantize is 8-levels of PCM System with probability of 1/4, 1/5, 1/4, 1/10, 1/20, 1/10, 1/20 and 1/10 respectively. Find the entropy and rate of information.	8 Marks
	b)	What is Shannon theorem? Obtain the channel capacity for Gaussian channel.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What do you mean by a model and explain briefly about different modeling techniques used in Software Engineering.	7 Marks
	b)	What is Object Oriented Modeling? Discuss its importance.	7 Marks
		(OR)	
2	a)	What is UML? Explain in details UML relationships for on-line student examination.	7 Marks
	b)	Explain the modeling techniques for relationships, dependencies and inheritance used in Structural Modeling of a system.	7 Marks

UNIT-II

3	a)	Discuss how object diagram can be used in modeling object structures.	7 Marks
	b)	Explain the common properties and uses of class diagrams.	7 Marks
		(OR)	
4		Where do we use object diagrams? Draw a class diagram for Library System.	14 Marks

UNIT-III

5		Explain the sequence diagram and collaboration diagram and draw an example for each one.	14 Marks
		(OR)	
6	a)	Define use case. State and explain different relationships that can be defined among use cases.	7 Marks
	b)	Draw the activity diagram for ATM transactions and explain.	7 Marks

UNIT-IV

7	a)	Discuss briefly with an example about the state machines in modeling life time of an object.	7 Marks
	b)	Draw state chart diagram and activity diagrams of simple chat system.	7 Marks
		(OR)	
8	a)	Discuss briefly about the behavioural modeling in forward and reverse engineering.	7 Marks
	b)	Explain with a suitable example behavioural modeling for a family of signals and exceptions.	7 Marks

UNIT-V

9		Elaborate on the common modeling techniques of deployment. Illustrate modeling fully distributed system.	14 Marks
		(OR)	
10	a)	What are the common uses of deployment diagrams? Draw the deployment diagram for online shopping.	7 Marks
	b)	Explain the component diagram with an example.	7 Marks

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CODE No.:14BT61201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

DATAWAREHOUSING AND DATA MINING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the characteristics of data warehouse and data mining.	7 Marks
	b)	Define data mining problem/issues.	7 Marks
		(OR)	
2	a)	Explain the kinds of data and kinds of patterns mined related to data mining.	7 Marks
	b)	Explain data warehousing modeling.	7 Marks

UNIT-II

3	a)	What is data pre-processing? Explain why it is essential to pre-process the data before mining.	6 Marks
	b)	Explain in detail about various data reduction techniques.	8 Marks
		(OR)	
4		Write short notes for the following. i) Data Transformation; ii) Data Descretization.	14 Marks

UNIT-III

5	a)	Explain the concept of multidimensional association rule mining.	6 Marks
	b)	With a suitable example, describe FP-Growth algorithm.	8 Marks
		(OR)	
6	a)	Describe the metrics used to find the strong association rules.	6 Marks
	b)	What are the drawbacks of Apriori? How to improve the performance of Apriori?	8 Marks

UNIT-IV

7	a)	Write and explain decision tree induction algorithm.	8 Marks
	b)	Explain, how to measure the accuracy of classifier.	6 Marks
		(OR)	
8	a)	Discuss in detail about attribute selection method with example.	7 Marks
	b)	Describe Bayesian Belief Networks.	7 Marks

UNIT-V

9	a)	Explain Density based method with example.	7 Marks
	b)	Differentiate between Partitioning and Hierarchical clustering methods.	7 Marks
		(OR)	
10	a)	Describe about Detection methods.	7 Marks
	b)	Describe AGNES ***vs*** DIANA.	7 Marks

CODE No.:14BT61202 SVEC-14 (RA)

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

WEB PROGRAMMING

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is "organizing text in HTML"? Give syntax and example for tags related to organizing text.	7 Marks
	b)	What are "Custom data attributes"? Give an example.	7 Marks
		(OR)	
2	a)	What is a Form? Create a form that collects the data for the student appearing EAMCET counseling examination.	9 Marks
	b)	Define "Client side storage". Explain drag and drop API.	5 Marks

UNIT-II

3	a)	State and explore various CSS selectors.	7 Marks
	b)	What is the role of *JavaScript* in web designing? Explain its features.	7 Marks
		(OR)	
4	a)	What is a box model? Give an example for usage of margins of a web page.	5 Marks
	b)	Write a JQuery code to add content to the selected HTML element.	9 Marks

UNIT-III

5	a)	Write a PHP program to implement Multilevel Inheritance.	7 Marks
	b)	Discuss about Multidimensional arrays in PHP.	7 Marks
		(OR)	
6	a)	Write PHP program to read today's date and print tomorrow's date.	7 Marks
	b)	Briefly explain about functions concept in PHP.	7 Marks

UNIT-IV

7	a)	What is **mysqli** extension? Explain how to interact with the database.	7 Marks
	b)	Explain with an example, how PHP works with multivalued form components.	7 Marks
		(OR)	
8	a)	List and explain three methods used by PHP for executing MySQL database transactions.	7 Marks
	b)	Define "*prepared statements*". Explain two types of prepared statements.	7 Marks

UNIT-V

9	a)	Define XML Schema? Show how an XML Schema can be created.	7 Marks
	b)	Explain DOM and SAX.	7 Marks
		(OR)	
10		Explain the following terms related to XML. i) XML parsing. ii) XML browsers. iii) XML editors. iv) XML validators.	14 Marks

CODE No.:14BT70101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

STEEL STRUCTURES

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain how limit state method of design differs from working stress method of design. 14 Marks

(OR)

2 Sketch the typical stress-strain relationship for mild steel and explain the important points of stress-strain curve of mild steel. 14 Marks

UNIT-II

3 In a truss, ∟100 x 100 x 8 is subjected to the factored tension of 200 kN. It is to be connected to a gusset using fillet welds at the toe and back. Find the lengths of weld required so that the centre of gravity of the welds lies in the plane of the centre of gravity of the angle. fu = 410MPa. 14 Marks

(OR)

4 Two flats (Fe 410 Grade steel) each 210 mm x 8 mm are to be jointed using 20 mm diameter, 4.6 grade bolts to form a lap joint. The joint is supported to transfer a factored load of 250 kN. Design the joint and determine suitable pitch for the bolts. 14 Marks

UNIT-III

5 A tension member of a roof truss carries a factored axial tension of 400kN. Design the section and its connection using lug angle. 14 Marks

(OR)

6 Determine the load carrying capacity of a strut made with ISA 100 75, 10mm, if its length is 2.8m in the following cases of the end connections: 14 Marks

i) one bolt used ii) two bolts used

iii) welded rigidly to gusset plate.

UNIT-IV

7 Design a built – up column 9m long to carry a factored axial load compressive load of 1200 kN. The column is restrained in position but not in direction at both the ends. Design the column with connecting system as battens with bolted connections. Use two channel sections back to back. Use steel of grade Fe410. 14 Marks

(OR)

8 Determine the design bending strength of ISLB 350@486N/m considering the beam to be 14 Marks

i) Laterally supported.

ii) Laterally unsupported.

The design shear force V is less than the design shear strength. The unsupported length of beam is 4.0m. Assume steel of grade Fe410.

UNIT-V

9	A steel column ISHB 250 @ 537 N/m supports a total factored load of 1000 kN. Design a slab base for the column. The column is supported on a pedestal made of M20 concrete.	14 Marks

(OR)

10	Design a gusseted base to carry an axial factored load of 3000 kN. The column is ISHB 450 @ 855 N/m with two 250 x 22 mm cover plates on either side. The effective height of the column is 5m. The column is to rest on M20 concrete pedestal.	14 Marks

CODE No.:14BT70102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

WATER RESOURCES ENGINEERING

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain with neat sketches, various methods of application of irrigation water.	7 Marks
	b)	Describe importance of irrigation and standards of quality of water required for irrigation.	7 Marks

(OR)

2	a)	Explain in detail the various soil moisture constants.	7 Marks
	b)	Define Duty and Delta. Derive the relationship between them.	7 Marks

UNIT-II

3	a)	What are the main causes of failures of weir on permeable foundations and also mention remedial measures to prevent them.	7 Marks
	b)	Explain with neat diagram about Khosla's theory for seepage below a weir.	7 Marks

(OR)

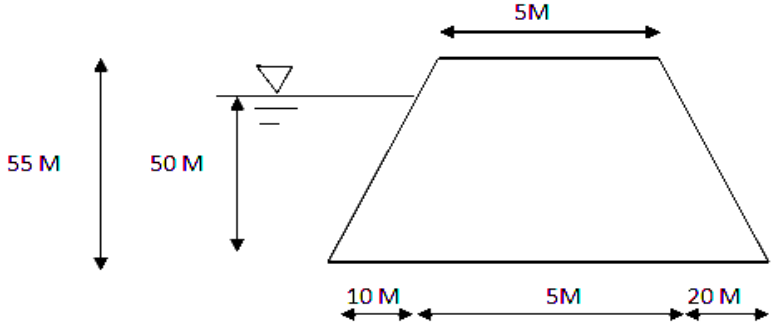
4	a)	Classify different types of Diversion Head works and also give examples for them.	7 Marks
	b)	Write step by step design procedure of impervious floor below the weir and also discuss about Exit gradient.	7 Marks

UNIT-III

5	a)	The amount of water flowing from a certain catchment area at the proposed dam site during the twelve months of a year in million cubic meters are: 2.83, 4.25, 5.66, 18.40, 22.64, 22.64, 19.81, 8.49, 7.10, 7.10, 5.66, 5.66. Find the minimum capacity of reservoir required if water is to be drawn at a uniform rate and no water is allowed to spill over.	7 Marks
	b)	Explain various factors to be considered in selection of suitable site for a dam.	7 Marks

(OR)

6	a)	Explain with neat sketches, the forces acting on the Gravity dam.	7 Marks
	b)	Check the stability of the dam given below, considering Hydro static pressure due to U/S water only, no Tail water, Uplift pressure and Earth quake forces. Consider both horizontal and vertical earthquake acceleration coefficient as 0.1.	7 Marks



UNIT-IV

7	a)	Explain with neat sketches, the various seepage control measures for Earth dam.	7 Marks
	b)	Discuss about various canal regulation works.	7 Marks
		(OR)	
8	a)	Describe the classification of canals.	7 Marks
	b)	Design an irrigation channel to carry a discharge of $45m^3$/sec. Assume N=0.0225, critical velocity ratio (m) =1 and the channel has a bed slope of 0.16m/km.	7 Marks

UNIT-V

9	a)	Explain various types of Aqueducts with neat sketches and mention criteria for their suitability.	7 Marks
	b)	Explain the design principles of siphon aqueduct.	7 Marks
		(OR)	
10	a)	Explain various types of cross-drainage works with neat sketches.	7 Marks
	b)	Explain the site conditions required for construction of a cross drainage work.	7 Marks

CODE No.:14BT70103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

GEOSPATIAL TECHNOLOGIES

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the following: i) Tilt ii) Principle point iii) Isocenter	6 Marks
	b)	Derive an expression for the scale of a vertical photograph.	8 Marks
		(OR)	
2		Define mosaic. Evaluate the methods used for mosaic construction.	14 Marks

UNIT-II

3	a)	Explain the necessity and importance of remote sensing.	7 Marks
	b)	Differentiate active and passive remote sensing systems.	7 Marks
		(OR)	
4	a)	Describe briefly the different elements of remote sensing.	7 Marks
	b)	What are the advantages and disadvantages of using remotely sensed data?	7 Marks

UNIT-III

5		Give brief note on spatial and non spatial data. Explain with suitable examples.	14 Marks
		(OR)	
6		Explain briefly Raster and Vector GIS data models.	14 Marks

UNIT-IV

7		Evaluate various network analysis tools used in GIS.	14 Marks
		(OR)	
8	a)	Describe briefly the data manipulation analysis in GIS.	7 Marks
	b)	Write the advantages and disadvantages of Vector and Raster data structures.	7 Marks

UNIT-V

9		Describe briefly flood and drought impact assessment and monitoring using RS and GIS. Explain with suitable case study.	14 Marks
		(OR)	
10		Give brief note on watershed management and sustainable development using RS and GIS. Explain with suitable case study.	14 Marks

CODE No.:14BT70104 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

TRANSPORTATION ENGINEERING–II

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain various measures for reduction of accidents.	7 Marks
	b)	Analyse the relationship between speed, travel time, volume, density and capacity through formulae.	7 Marks

(OR)

2	a)	What are various traffic characteristics? Explain in detail.	7 Marks
	b)	A vehicle traveling at 50kmph was stopped within 2.0 seconds after the application of the brakes. Determine the average skid resistance.	7 Marks

UNIT-II

3	a)	How the traffic volume data are presented and results used in traffic volume studies? Discuss in detail.	7 Marks
	b)	A vehicle skids through a distance equal to 40m before colliding with another parked vehicle, the weight of which is 75% of the former. After collision if both the vehicles skid through 14m before stopping compute the initial speed of moving vehicle. Assume friction coefficient of 0.62.	7 Marks

(OR)

4	a)	Explain traffic capacity, basic capacity, possible capacity, practical capacity and PCU.	7 Marks
	b)	Calculate the basic capacity of traffic lane at a speed of 50kmph. Assume that all the vehicles are of average length 5m.	7 Marks

UNIT-III

5		The driver of a vehicle traveling at 80kmph up a grade required 9m less to stop after he applies the brakes than the driver traveling at the same initial speed down the same grade. If the coefficient of friction between tire and pavement is 0.5, what is the percent grade and what is the braking distance down the grade?	14 Marks

(OR)

6		At a right-angled intersection of two roads, Road 1 has four lanes with a total width of 12m and Road 2 has two lanes with a total width of 6.6m. The volume of traffic approaching the intersection during design hour are 900 and 743 PCU/hour on the two approaches of Road 2. Design the signal timings as per IRC guidelines.	14 Marks

UNIT-IV

7	a)	Explain the significance of Chi-Square test in traffic engineering.	7 Marks
	b)	A toll booth at the entrance to a bridge can handle 120VPH, the time to process a vehicle being exponentially distributed. The flow is 90VPH with a Poisson's arrival pattern. Determine: i) Average number of vehicles in the system. ii) Length of the queue. iii) Average time spent by the vehicle in the queue.	7 Marks

(OR)

8 a) Explain the applications of simulation techniques in the context of traffic engineering. 7 Marks

b) The speed and concentration of vehicle in a traffic stream were observed and the following data are obtained. Find the linear regression equation for determining the speed and concentration. 7 Marks

K(VPH)	5	10	15	20	25	30	35	40	45	50
V(KMPH)	72	68	61	52	47	39	32	27	20	13

UNIT-V

9 a) Write a note on: 7 Marks

i) Traffic segregation.
ii) Traffic calming.
iii) Tidal flow operations.

b) Elaborate on the difference between TSM and TDM. 7 Marks

(OR)

10 a) What are the measures to reduce air pollution due to traffic? 7 Marks

b) Explain the aspects to be considered in highway project. What are the various preparation techniques of EIA for a highway project? 7 Marks

CODE No.:14BT70106 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

ENVIRONMENTAL POLLUTION AND CONTROL

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define air pollution. What are the primary air pollutants and secondary air pollutants explain with example.	7 Marks
	b)	Discuss briefly classification of air pollutants.	7 Marks
		(OR)	
2		Explain the working principle of Electrostatic Precipitator with a neat sketch. What are its advantages and disadvantages?	14 Marks

UNIT-II

3	a)	Explain how acid rains are formed. What are the effects and control measures of acid rains?	7 Marks
	b)	Describe fabric filters for the removal of particulate matter with a neat sketch.	7 Marks
		(OR)	
4	a)	Describe the effects of air pollutants on vegetation.	6 Marks
	b)	Explain various types of wet scrubbers used for the control of particulate matter. What are the advantages of scrubbers?	8 Marks

UNIT-III

5	a)	What are the pollution controlling strategies for industrial waste water management?	7 Marks
	b)	What are the control methods of thermal pollution?	7 Marks
		(OR)	
6	a)	Analyze the major pollutants caused by ground water pollution.	7 Marks
	b)	Analyze various control measures for water pollution.	7 Marks

UNIT-IV

7		Discuss the causes and control of soil pollution.	14 Marks
		(OR)	
8	a)	Write short notes on: i) Harmful effects of soil pollution by fertilizers and pesticides. ii) Methods to minimize soil pollution.	8 Marks
	b)	Discuss the following sources of soil pollution: i) Industrial wastes. ii) Urban wastes.	6 Marks

UNIT-V

9	a)	What are the sources of solid wastes? Explain the sources of solid wastes.	7 Marks
	b)	Explain the collection methods for solid wastes.	7 Marks
		(OR)	
10	a)	Explain sanitary land filling method of solid waste disposal. What are the advantages and disadvantages of land filling?	7 Marks
	b)	What is the purpose of incineration of solid wastes? With a neat diagram, explain incineration process. What are the advantages and disadvantages of incineration?	7 Marks

CODE No.:14BT70109 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

RURAL TECHNOLOGY

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the role of rural business hubs in improving rural infrastructure.	14 Marks
		(OR)	
2		Explain the role of CAPART and NIF in rural development.	14 Marks

UNIT-II

3	a)	What is the principle behind working of solar cooker and solar heater?	7 Marks
	b)	State the significance of 3R principle.	7 Marks
		(OR)	
4		What are biomass products? Write about their production potential, assessment and utilization.	14 Marks

UNIT-III

5	a)	What are the principles applicable in building construction technologies?	7 Marks
	b)	Elaborate role of cottage industry in rural development.	7 Marks
		(OR)	
6		Discuss foods and agro based technologies which will give employment and profits to community.	14 Marks

UNIT-IV

7		Write a short notes on: i) Uses of Bio fertilizers. ii) Apiculture-Pici Culture Aqua culture.	14 Marks
		(OR)	
8	a)	Write a detailed note on rain water harvesting.	7 Marks
	b)	Write a short notes on the provision of the following in rural areas: i) Drinking water. ii) Environment generating technologies.	7 Marks

UNIT-V

9		Explain the role of private sector participation in rural development.	14 Marks
		(OR)	
10		Information technology for the rural development is a boon or bane and apply its principles for a specific purpose.	14 Marks

CODE No.:14BT70111 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

ADVANCED FOUNDATION ENGINEERING

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) A foundation 1.5m x 1.5m is located at a depth D_f of 1m in a stronger clay. A softer clay layer is located at a depth H of 1m, measured from the bottom of the foundation. For the top clay layer, Undrained shear strength=120kN/m² and unit weight = 16.8kN/m² and for bottom layer, Undrained shear strength = 48kN/m² and unit weight = 16.2kN/m². Determine the gross allowable load for the foundation with a factor of safety of 4. 7 Marks

b) Discuss the differences in Terzaghi and Meyerhof theories. Derive an expression of ultimate bearing capacity using Meyerhof theory. 7 Marks

(OR)

2 a) A rigid raft 20m x 20m transfers a stress of 150kN/m² to the soil at its base located at 2m below the ground surface. The sub-soil consists of sand down to a depth of 12m underlain by sandstone. The E for the sand is 60 x 10^3 kN/m².
   i) Make as best an estimate of settlement as possible.
   ii) What would have been the error in the estimate if the presence of bedrock is ignored. 8 Marks

b) What is floating raft? What is its design principal? 6 Marks

UNIT-II

3 a) Write a short note on negative skin friction. 4 Marks

b) A group of 12 piles each having a diameter of 500mm and 30 meters long supports a column. The piles are arranged in 3 rows and spaced at 1.25 meters c/c. The properties of the foundation soil (clay)areas follows:- Unit weight = 11kN/m³, Unconfined compressive strength = 100kN/m². Determine the capacity of the pile group. 10 Marks

(OR)

4 a) What is the basis on which the dynamic formulae are derived? Mention two well known dynamic formulae and explain the symbols involved. 7 Marks

b) A group of 16 piles 25m long and 450mm in diameter is to be arranged in a square form in a clay soil with an average unconfined strength of 36kN/m². Workout the center to center spacing of the piles for a group efficiency factor of 1. Neglect bearing at the tip of the piles. 7 Marks

UNIT-III

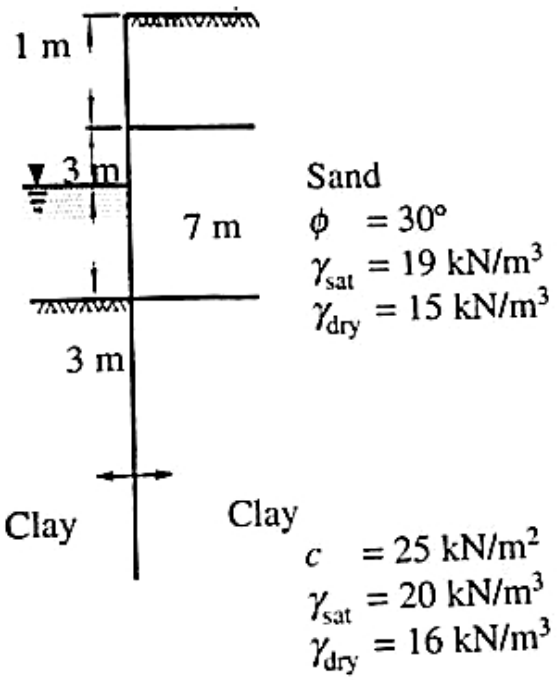
5 a) With suitable illustration, describe the analysis used for finding the depth of embedment. 7 Marks

b) Describe the 'fixed earth support' method for designing anchored bulkheads. 7 Marks

(OR)

6 a) Discuss various methods for providing anchors for a sheet pile wall. 7 Marks

b) Design the anchored bulkhead shown in figure, by using free earth support method. 7 Marks



UNIT-IV

7 Write short notes on:

i) Distinguish between soft clays and expansive soils. 5 Marks

ii) Foundation techniques in expansive soil. 5 Marks

iii) Identification tests of expansive soils. 4 Marks

(OR)

8 a) Discuss the principal and functioning of under reamed piles. 7 Marks

b) Explain Lime column Technique. 7 Marks

UNIT-V

9 a) What are the different loads that are considered in the design of water front structure? Explain. 7 Marks

b) Write a brief note on design of wall type break water. 7 Marks

(OR)

10 a) Explain different types of marine structures and their uses. 7 Marks

b) Write short notes on ship impact on piled wharf structure. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the preparation of environmental base map.	7 Marks
	b)	Explain the limitations of EIA.	7 Marks
		(OR)	
2	a)	What are the Elements of EIA?	7 Marks
	b)	What is Initial environmental examination?	7 Marks

UNIT-II

3	a)	Explain network method of EIA.	7 Marks
	b)	Explain matrix method of EIA.	7 Marks
		(OR)	
4	a)	Explain Media Quality index method in detail.	7 Marks
	b)	How cost benefit analysis is carried for the selected EIA method?	7 Marks

UNIT-III

5	a)	Draw the schematic diagram for conceptual approach to the study focused on surface water environment impacts.	7 Marks
	b)	Write a detailed note on 'compilation of water Quantity-Quality information'.	7 Marks
		(OR)	
6	a)	Write a detailed note on identification of activities which will have different types of impacts on soil and ground water Quantity and Quality.	7 Marks
	b)	Explain in detail about impact significance and mitigation measures.	7 Marks

UNIT-IV

7	a)	Write a short note on Environmental Impact of deforestation.	7 Marks
	b)	Explain the Box-model approaches for prediction of various environmental impacts for Engineering projects.	7 Marks
		(OR)	
8	a)	Describe different sources of air pollution.	7 Marks
	b)	Explain the Mass balance approach for prediction of environmental impacts of engineering projects.	7 Marks

UNIT-V

9	a)	Explain the objectives of Environmental Audit.	7 Marks
	b)	Explain briefly about Air Act and Wild Life Act.	7 Marks
		(OR)	
10		Explain one case study on EIA in Industries.	14 Marks

CODE No.:14BT70201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

POWER SEMICONDUCTOR DRIVES

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) State and explain the functions of various converters. 4 Marks

b) A motor has two loads. One has rotational motion. It is coupled to the motor through a reduction gear with a = 0.1 and efficiency of 95%. The load has a moment of inertia of 20 kg-m² and a torque of 10 N-m. Other load has translational motion and consists of 1000kg weight to be lifted up at a uniform speed of 1.5 m/s. Coupling between this load and the motor has an efficiency of 90%. Motor has inertia of 0.1 kg-m² and runs at a constant speed of 1440 r.p.m. Determine equivalent inertia referred to the motor shaft and power developed by the motor. 10 Marks

(OR)

2 a) Discuss Multi-quadrant operation of electrical drives with suitable application. 7 Marks

b) A motor drives four load, two have rotational motion and two translational motions. Moment of inertia of motor is 1.2 kg-m². Motor runs at a speed of 1400 r.p.m. Following are the details about the four loads. Calculate the equivalent inertia of the system referred to the motor shaft and power rating of the motor, assuming negligible loss in the transmission system. 7 Marks

Load	Type of Motion	Speed	Inertia/Mass	Torque/Force
I	Rotational	200 r.p.m	8 kg-m²	15 N-m
II	Rotational	200 r.p.m	6 kg-m²	6 N-m
III	Translational	10m/s	10 kg	20N
IV	Translational	10m/s	30 kg	40N

UNIT-II

3 Explain single phase fully controlled converter control of dc separately excited motor under discontinuous conduction. Derive the expression for critical speed and draw the speed torque characteristics. 14 Marks

(OR)

4 a) Explain rectifier control of dc series motor. 7 Marks

b) Speed of a **dc** series motor coupled to a fan load is controlled by variation of armature voltage. When armature voltage is 400 V, motor takes 20A and the fan speed is 250r.p.m. The combined resistance of armature and field is 1.0Ω. Calculate : i) Motor armature voltage for the fan speed of 350 r.p.m. ii) Motor speed for the armature voltage of 250 V. 7 Marks

UNIT-III

5 a) Explain the operation of a four quadrant chopper fed to the **dc** series motor and also draw the current and voltage wave forms for continuous current operation. 7 Marks

b) A 220V, 24A, 1000 r.p.m separately excited dc motor having an armature resistance of 2Ω is controlled by a chopper. The chopping frequency is 500Hz and the input voltage is 230V. Calculate the duty ratio for a motor torque of 1.2 times rated torque at 500 r.p.m. 7 Marks

(OR)

6 A 230V, 960 r.p.m and 200A separately excited dc motor has an armature resistance of 0.02Ω. The motor is fed from a chopper, which is capable of providing both motoring and braking operations. The source has a voltage of 230V. Assuming continuous conduction: When motor is operated in dynamic braking, with braking resistance of 2Ω. 14 Marks

i) Calculate duty ratio of chopper for a motor speed of 600 r.p.m and braking torque of twice the rated value.

ii) What will be the motor speed for a duty ratio of 0.6 and motor torque equal to twice its rated value?

UNIT-IV

7 a) A 2.8 kW, 400 V, 50 Hz, 4 pole, 1370 r.p.m, delta connected squirrel-cage induction motor has following parameters referred to the stator: $\mathbf{R_s = 2\Omega}$, $\mathbf{R_r' = 5\Omega}$, $\mathbf{X_s = X = 5\Omega}$, $\mathbf{X_m = 80\Omega}$. Motor speed is controlled by stator voltage control. When driving a fan load it runs at rated speed at rated voltage. Calculate; 10 Marks

i) Motor terminal voltage, current and torque at 1200 r.p.m.

ii) Motor speed, current and torque for the terminal voltage of 300V.

b) State the major advantages and disadvantages of slip power recovery. 4 Marks

(OR)

8 a) Explain the operation of CSI fed induction motor drive. 7 Marks

b) Discuss speed control of induction motor drive fed from cycloconverter. 7 Marks

UNIT-V

9 a) Explain the operation of load commutated CSI fed synchronous motor drive. 7 Marks

b) Describe the operation of self-controlled synchronous motor drives in detail. 7 Marks

(OR)

10 Explain about the switched reluctance motor drives in detail. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

POWER SYSTEM OPERATION AND CONTROL

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Derive the condition for economical load dispatch among various generating plants. Also explain with flow chart for the solution of economical load dispatch problem by λ-iteration method. 7 Marks

b) Determine the operating schedule of 2-generator case of 100MW each whose incremental characteristics are given by 7 Marks

$$\frac{dF_1}{dF_2} = 2 + 0.012P_1 \qquad \frac{dF_2}{dP_2} = 1.5 + 0.015P_2$$

The minimum load on each unit is 10MW. The total load to be supplied is 150MW.

(OR)

2 a) Derive transmission line loss equation in terms of B-coefficients. 7 Marks

b) Three plants of total capacity 500MW are scheduled for operation to supply a total system load of 310MW. Evaluate the optimum load scheduling, if the plants have the following incremental cost characteristics and the limitations. 7 Marks

$$\frac{dc_1}{dp_{g_1}} = 0.12P_{G1} + 30Rs/MWh$$

$$\frac{dc_2}{dp_{g2}} = 0.2P_{G2} + 40.0Rs/MWh$$

$$\frac{dc_3}{dp_{g3}} = 0.15P_{G3} + 10Rs/MWh$$

$30 \le P_{G1} \le 150$ $20 \le P_{G2} \le 100$ $50 \le P_{G3} \le 250.$

UNIT-II

3 Obtain the optimal operation of a fundamental hydro thermal system with necessary equations. 14 Marks

(OR)

4 a) Obtain the short-term scheduling of hydrothermal power system using penalty factor. 7 Marks

b) Derive and explain about Hydro Power Equation. 7 Marks

UNIT-III

5 Draw the flowchart and explain the unit commitment problem using priority list method. 14 Marks

(OR)

6 a) Explain the dynamic programming method used for unit commitment of power flow. 7 Marks

b) Explain the various constraints in unit commitment problem. 7 Marks

UNIT-IV

7 Explain the function of excitation system in controlling the governor voltage and explain in detail about the static excitation system employed for the purpose. 14 Marks

(OR)

8 Making suitable assumptions, derive the transfer function of speed governor and steam turbine set. 14 Marks

UNIT-V

9 a) A 100 MVA Synchronous generator operates on full load at a frequency of 50 Hz. The load is suddenly reduced to 50MW. Due to time lag in governor system, the steam valve begins to close after 0.4 secs. Determine the change in frequency that occurs in this time. 7 Marks

b) Analyze the steady state change in system frequency for a sudden change in load demand by an amount ΔPd assuming free governor operation. 7 Marks

(OR)

10 a) A 1000 MW control area 1 is interconnected with 5000MW control area 2. The system has the following parameters. 7 Marks

Area 1 R_1=2Hz/PU MW D_1=0.01 PU MW /Hz.

Area 2 R_2=0.4 Hz/PU MW D_2=0.05 P.U MW/Hz.

Estimate the static frequency drop if the increase in load 1 P_D=0.01 PU MW.

b) Explain proportional plus integral control of LFC for a single area power system. 7 Marks

CODE No.:14BT70203 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

POWER SYSTEM ANALYSIS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 For the network shown in Fig. 1, form the network matrix Y_{BUS} by singular transformation. 14 Marks

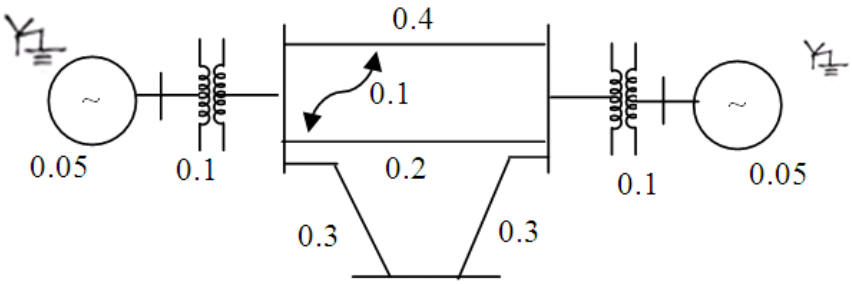


Fig. 1

(OR)

2 a) Using singular transformation, derive the expressions for loop impedance and loop admittance matrices. 7 Marks

b) For the power system shown in Fig. 2 below, draw a graph, a possible tree and construct the incidence matrices 7 Marks

i) Element node incidence matrix. ii) Bus incidence matrix.
iii) Basic cutest incidence matrix. iv) Basic loop incidence matrix.
v) Branch path incidence matrix.

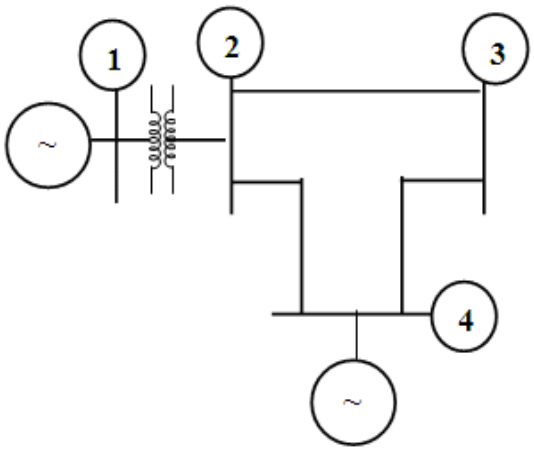


Fig. 2

UNIT-II

3 a) Determine the bus impedance matrix for the system whose reactance diagram is shown in Fig. 3. All the impedances are in p.u. 9 Marks

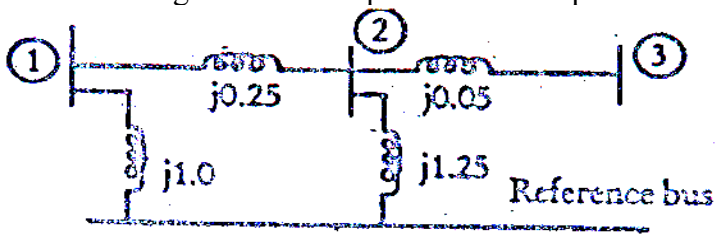


Fig. 3

b) Derive expression for a partial network adding a link to form Z_{bus} 5 Marks

(OR)

4 a) Starting from Z_{bus} for a partial network, describe step - by - step how you will obtain the Z_{bus} for a modified network when a new line is to be added to a bus in the existing network. 7 Marks

b) Obtain the Park's transformation matrix. 7 Marks

UNIT-III

5 A three bus power system, system parameters are given in Table - l and the load and generation data in Table - 2. The voltage at bus 2 is maintained at l.03p.u. The maximum and minimum reactive power limits of the generation at bus 2 are 35 and 0 Mvar respectively. Taking bus 1 ass lack bus, bus 2 is PV bus and bus 3 is PQ bus. Obtain the voltages after first iteration using Gauss - Seidel iterative method using Y_{bus} 14 Marks

Table – 1

Bus code i-k	Impedance(p.u) Z_{ik}	Line charging Admittance (p.u.) y_1
1-2	0.08 + j0.24	0
1-3	0.02 + j0.06	0
2-3	0.06 + j0.018	0

Table – 2

Bus No i	Bus voltage V_i	Generation		Load	
		MW	Mvar	MW	Mvar
1	1.05 +j0.0	---	---	0	0
2	1.03 +j0.0	20	---	50	20
3	---	0	0	60	25

(OR)

6 a) The parameters of a 4-bus system are as under: 10 Marks

Bus code	Line impedance(p.u)	Charging admittance
1-2	0.2+j0.8	j0.02
2-3	0.3+j0.9	j0.03
2-4	0.25+j1.0	j0.04
3-4	0.2+j0.8	j0.02
1-3	0.1+j0.4	j0.01

Draw the network and find bus admittance matrix.

b) What are the methods available for forming bus impedance matrix? 2 Marks

c) What is the advantage of building algorithm over other methods of forming Z_{bus}? 2 Marks

UNIT-IV

7 Derive necessary expressions for the off-diagonal and diagonal elements of the sub-matrices J1, J2, J3 and J4 for carrying out a load flow study on power system by using N-R method in Polar form. 14 Marks

(OR)

8 a) Write down the comparison of decoupled and fast decoupled form of N-R methods. 5 Marks

b) Draw the flowchart for N-R method in polar coordinates method. 5 Marks

c) Discuss the various types of buses and its significance. 4 Marks

UNIT-V

9 a) Write a note on methods of improving steady state and transient stabilities of a power system network. 7 Marks

b) Explain point by point method of solving Swing equation by deriving necessary equations. 7 Marks

(OR)

10 Find the critical clearing angle for the system shown in Fig. 4 for a 3-phase fault at the point P. The generator is delivering 1.0pu power under prefault conditions. 14 Marks

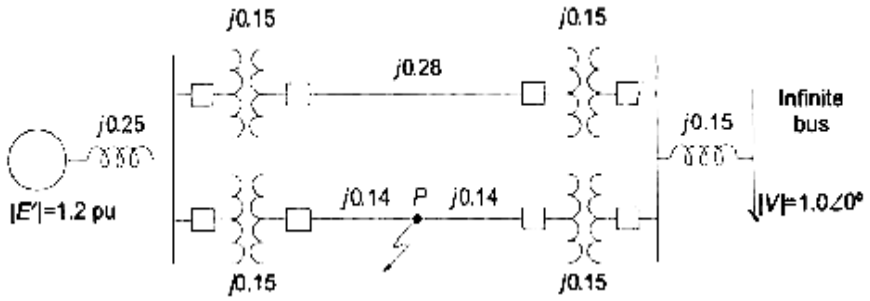


Fig. 4

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

REACTIVE POWER COMPENSATION AND MANAGEMENT

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain how a load compensator works as a voltage regulator.	14 Marks
		(OR)	
2		How power factor correction and voltage regulation can be achieved by means of compensation in single-phase systems?	14 Marks

UNIT-II

3	a)	Illustrate the switched shunt reactor compensation for uncompensated transmission line.	7 Marks
	b)	Discuss the advantages and disadvantages of different compensating equipment for transmission systems.	7 Marks
		(OR)	
4	a)	Analyze the main objectives of series compensation.	7 Marks
	b)	Explain uniformly distributed fixed compensation in transmission lines.	7 Marks

UNIT-III

5	a)	Discuss the causes and effects of under and over frequencies.	7 Marks
	b)	Explain in detail the concepts of: i) Effects of harmonics and how to compensate it. ii) Effect of electromagnetic interferences.	7 Marks
		(OR)	
6	a)	Explain the concept of quality of power supply with reactive power coordination.	7 Marks
	b)	Mention the importance of reactive power coordination. Also list the objectives of reactive power coordination.	7 Marks

UNIT-IV

7	a)	Write note on system losses and the procedures for arriving at losses in power systems.	7 Marks
	b)	Explain any two types of loss reduction techniques.	7 Marks
		(OR)	
8	a)	Explain the concept of penalties for voltage flickers and harmonic voltage levels with necessary expressions and examples.	7 Marks
	b)	Draw and explain the different load patterns in demand side.	7 Marks

UNIT-V

9		Explain how a user side reactive power management is obtained by means of capacitors.	14 Marks
		(OR)	
10	a)	Draw typical layouts of AC traction systems and explain its operation.	7 Marks
	b)	Explain how the harmonics are produced in an electric arc furnace.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

FINITE ELEMENT METHODS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

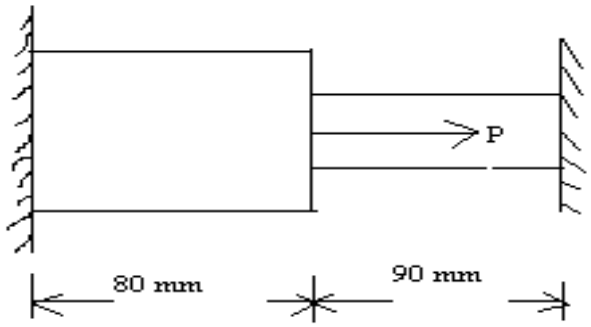
1 a) Describe the general steps of finite element method. 7 Marks

b) State few applications of FEM. 4 Marks

c) Write the stress strain relations in three dimensional stress systems. 3 Marks

(OR)

2 Determine the nodal displacements for the bar shown in the figure. 14 Marks
Take $E_1=E_2=70 \times 10^3$ N/mm^2, $L_1=80$mm, $L_2=90$mm, $A_1=900$mm^2, $A_2=400$mm^2, $P=20$ kN.

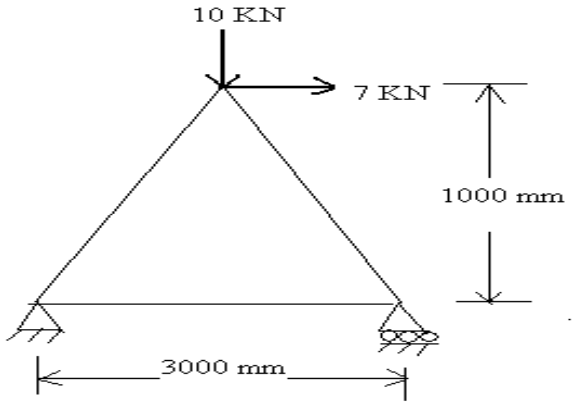


UNIT-II

3 A simply supported beam of span 2m is subjected to a point load of 100 kN at the centre and a bending moment of 20 kN-m also at the centre. Calculate the maximum deflection and slope if the flexural rigidity is 800×10^3 N-m^2. 14 Marks

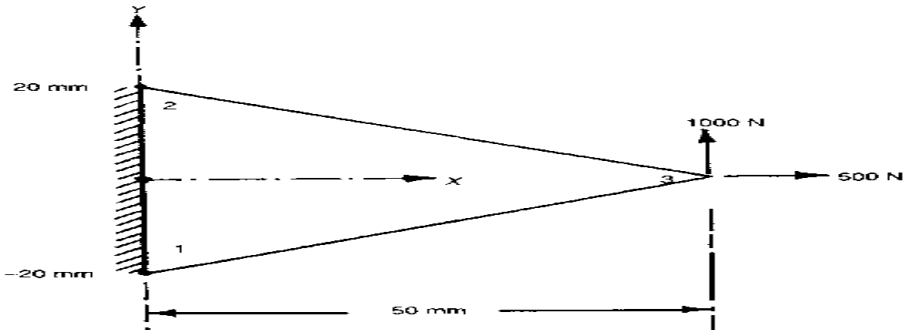
(OR)

4 For the following three member truss shown in figure, determine nodal deflections. Area of each member as 600 mm^2 and E = 200 GPa. 14 Marks



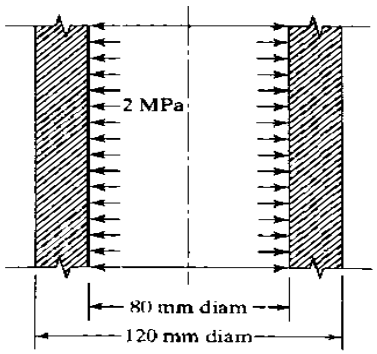
UNIT-III

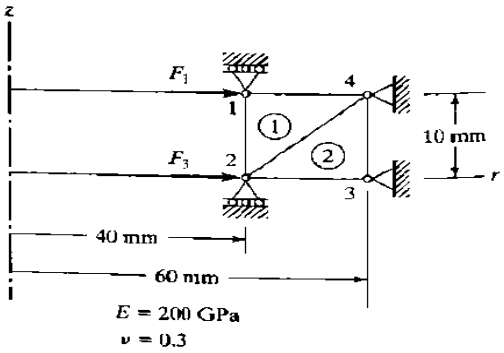
5 Find the stresses in the plate shown in figure using one CST element. 14 Marks
Assume **E= 205GPa, υ = 0.3, t = 10mm**.



(OR)

6 A long cylinder of inside diameter 80mm and outside diameter 120mm snugly fits in a hole over its full length. The cylinder is then subjected to internal pressure of 2MPa, using two elements on the 10mm length find the displacements at the inner radius. 14 Marks



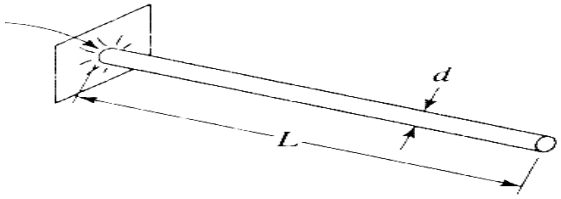


UNIT-IV

7 a) Derive the shape functions for a 4-node iso-parametric element. 7 Marks
b) Determine the values of weights and Gauss points in case of numerical integration using two-point formula. 7 Marks

(OR)

8 Consider a pin fin as shown in figure having a diameter of 0.0079m and length of 0.127m. At the root, the temperature is 65.55^{0}C. The ambient temperature is 26.67^{0}C and h=34.07W/m^2 ^{0}C. Take k=42.89 W/m^{0}C. Considering the convection from the tip also, using a two-element model, determine the temperature distribution and heat loss in the fin. 14 Marks



UNIT-V

9 Write the finite element procedure to determine natural frequencies of a stepped bar. 14 Marks

(OR)

10 a) Explain Hamilton's principle with an example. 7 Marks
b) Differentiate consistent mass matrix and lumped mass matrix. 7 Marks

CODE No.:14BT70302 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

MANUFACTURING SYSTEM DESIGN

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the factors that are taken into consideration in classification of manufacturing systems into different types.	14 Marks
		(OR)	
2		Discuss basic elements of automated system mentioning their importance.	14 Marks

UNIT-II

3		Explain the following in related to performance measures in an automated manufacturing system.	
		i) Manufacturing lead time.	5 Marks
		ii) Work-in-progress.	5 Marks
		iii) Machine utilization.	4 Marks
		(OR)	
4		Discuss about various performance modeling tools in an automated manufacturing system.	14 Marks

UNIT-III

5		Discuss about the single station automated cells with its applications.	14 Marks
		(OR)	
6	a)	Discuss the applications of automated production lines in processing operations and assembly.	7 Marks
	b)	What are the principles of material handling system?	7 Marks

UNIT-IV

7	a)	Discuss about machine cell design and its types.	7 Marks
	b)	Summarize quantitative analysis in Cellular Manufacturing System.	7 Marks
		(OR)	
8	a)	List and explain types of FMS in detail.	7 Marks
	b)	Explain about various implementation issues in FMS.	7 Marks

UNIT-V

9		What is simulation? Discuss various types of simulation models used in manufacturing system design.	14 Marks
		(OR)	
10	a)	Explain the procedure for simulation using software.	7 Marks
	b)	What are the applications of simulation?	7 Marks

CODE No.:14BT70303 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

METROLOGY AND MEASUREMENTS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is a limit system? Why limits are specified for a given dimension?	4 Marks
	b)	Explain unilateral system and bilateral system of specifying limits.	3 Marks
	c)	Determine limit dimensions for a clearance fit between mating parts of diameter 40mm, providing a minimum clearance of 0.10mm with a tolerance on the hole equal to 0.025mm and on shaft 0.05mm using both Hole basis and Shaft basis systems.	7 Marks

(OR)

2	a)	Explain the working of reed type mechanical comparator with a neat sketch.	7 Marks
	b)	Discuss the design procedure for plug and ring gauges as per Taylor's principle of gauging.	7 Marks

UNIT-II

3	a)	Name the various factors affecting the accuracy of a sine bar.	7 Marks
	b)	Explain why it is not performed to use a sine bar for generating angles larger than 45^0 if high accuracy in angle generation is required.	7 Marks

(OR)

4	a)	Describe with a sketch the principle of working of an Autocollimator.	7 Marks
	b)	Describe the use of optical flats and mono-chromatic light for dimensional comparison and testing flatness of surfaces.	7 Marks

UNIT-III

5	a)	Differentiate between surface roughness and waviness.	5 Marks
	b)	Explain how a precision level can be used to determine the flatness and straightness of machine beds.	9 Marks

(OR)

6	a)	With a neat sketch, illustrate how the effective diameter of a screw thread may be checked using the three wire method.	7 Marks
	b)	Describe a gear tooth Vernier and indicate how the tooth thickness is checked with this instrument.	7 Marks

UNIT-IV

7	a)	Explain the method of usage of resistance strain gauge for measuring torque.	7 Marks
	b)	Explain the construction and working principle of photo electric transducer to measure displacement with a neat sketch.	7 Marks

(OR)

8	a)	Distinguish between mechanical and electrical tachometers.	7 Marks
	b)	Explain the construction and working principle of non contact type of tachometer with a neat sketch.	7 Marks

UNIT-V

9 a) What are the standards and calibration methods of temperature measurements? Explain in detail. 8 Marks

b) Brief note on 6 Marks

i) Digital thermometers.

ii) Vibrating wire force transducers.

(OR)

10 State any two methods of shaft power measurement systems and describe briefly about construction and working principle of them. 14 Marks

CODE No.:14BT70304 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

INDUSTRIAL AUTOMATION AND ROBOTICS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is need of automation? Explain the types of automation.	6 Marks
	b)	Discuss various part transfer methods and mechanisms in automation.	8 Marks
		(OR)	
2	a)	Discuss about system assembly lines and flexible assembly lines.	8 Marks
	b)	Explain automated flow line with storage buffer.	6 Marks

UNIT-II

3	a)	List out the various types of robots and explain them with a neat sketch.	7 Marks
	b)	Write the following with neat sketches: i) Pneumatic drive. ii) Hydraulic drive.	7 Marks
		(OR)	
4		Define and explain: i) Work volume. ii) Degree of freedom. iii) Stability. iv) Spatial resolution.	14 Marks

UNIT-III

5		Obtain the resultant vector, given a vector $u = 2i + 4j + 6k$, translating it to (0, 2, 4), rotating by 90^0 about Z-axis and then 30^0 about X-axis.	14 Marks
		(OR)	
6		Discuss about the forward solution in robot kinematics using D-H matrix.	14 Marks

UNIT-IV

7		Explain the various steps involved in Trajectory Planning.	14 Marks
		(OR)	
8	a)	With a neat sketch, explain the working of a tactile position sensor.	6 Marks
	b)	What is a proximity sensor? Explain any one of such sensor.	8 Marks

UNIT-V

9	a)	Discuss about lead through programming methods.	6 Marks
	b)	What are the benefits and risks of artificial intelligence?	8 Marks
		(OR)	
10		What are the future applications of robots?	14 Marks

CODE No.:14BT70305 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

REFRIGERATION AND AIR CONDITIONING

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Demonstrate the following: 6 Marks
i) Heat engine ii) Refrigerator iii) Heat pump

b) A refrigerator works on the Carnot cycle in temperature between -7ºC and 27ºC. It makes 500kg of ice per hour at -5ºC from water at 14ºC. Find the power required to drive the compressor and COP of the cycle. Take specific heat of ice as 2.1 kJ/kg-K and latent heat as 336 kJ/kg. 8 Marks

(OR)

2 a) Explain the working of a boot-strap cycle of air refrigeration system. 7 Marks

b) A refrigerant working on Bell-Coleman cycle operates between pressure limits of 1.05 bar and 8.5 bar. Air is drawn from the cold chamber at Air is coming out of compressor is cooled to 30ºC before entering into expansion cylinder. Expansion and compression follow the law $pv^{1.3} = C$. Determine the COP of the system. 7 Marks

UNIT-II

3 a) Justify the use of throttling device for expansion instead of an expander in a Vapour Compression refrigeration system. 6 Marks

b) Explain the terms ODP and GWP. Name few environmental friendly refrigerants having low ODP. 8 Marks

(OR)

4 A refrigeration cycle uses Freon-12 as the working fluid. The temperature of the refrigerant in the evaporator is -10ºC. The condensing temperature is 40ºC. The cooling load is 150W and the volumetric efficiency of the compressor is 80%. The speed of the compressor is 720 r.p.m. Calculate the mass flow rate of the refrigerant and displacement volume of the compressor. 14 Marks

Properties of Freon-12

Temp. (ºC)	Saturation pressure (MPa)	Enthalpy (kJ/kg)		Specific volume (m^3/kg) saturated vapour
		Liquid	Vapour	
-10	0.22	26.8	183.0	0.08
40	0.96	74.5	203.1	0.02

UNIT-III

5 a) Explain with a neat sketch the working of a practical Aqua-Ammonia Vapour Absorption refrigeration system. 8 Marks

b) Calculate the theoretical COP of a Vapour Absorption refrigeration system operating with a Generator temperature of 60ºC and Evaporator temperature 5ºC. Assume the coolant used is same for both the Absorber and Condenser and they are maintained at a temperature of 30ºC. 6 Marks

(OR)

6 a) Explain the working of an Electrolux refrigerator with a neat sketch. 7 Marks

b) Explain the working principle of steam Jet refrigeration system. 7 Marks

UNIT-IV

7 a) Show the following processes on the skeleton psychometric chart: 4 Marks

i) Heating and Dehumidification.

ii) Cooling with adiabatic Humidification.

b) The following data refer to air conditioning of a public hall: 10 Marks

Outdoor conditions = 40C DBT, 20 C WBT

Required comfort conditions = 20C DBT, 50%RH

Seating capacity of hall = 1000

Amount of outdoor air supplied = 0.3m^3/min/person

If the required conditions is achieved first by adiabatic humidifying and then cooling, find:

i) The capacity of the cooling and surface temperature of the coil if the BPF is 0.25.

ii) The capacity of humidifier and its efficiency.

(OR)

8 a) Explain the difference between winter air conditioning and summer air conditioning. 6 Marks

b) 500m^3/min of fresh air at 30C DBT and 50% RH is adiabatically mixed with 1000m^3/min of recirculated air at 22C DBT and 10C DPT. Calculate the enthalpy, specific volume, humidity ratio, and final DBT of the mixture. 8 Marks

UNIT-V

9 a) Define the human comfort and explain the factors which affect human comfort. 7 Marks

b) Discuss the various types of duct systems and their applications. 7 Marks

(OR)

10 a) What are the advantages and disadvantages of spray type dehumidifier over a coil type dehumidifier. 7 Marks

b) Explain the use of heat pump for heating and cooling cycle with neat diagram. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

SUPPLY CHAIN MANAGEMENT

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State the significance and objectives of supply chain management.	7 Marks
	b)	'The goals of supply chain aim to increase profitability, flexibility and customer satisfaction' - Comment.	7 Marks
		(OR)	
2	a)	Discuss the different competitive strategies adopted by companies.	7 Marks
	b)	Describe various means of achieving strategic fit and obstacles to achieve it.	7 Marks

UNIT-II

3	a)	Discuss the common inventory management mistakes made by supply chain managers.	7 Marks
	b)	Explain the concept of Distribution Resource Planning.	7 Marks
		(OR)	
4	a)	Describe the effect of demand uncertainty and risk pooling.	7 Marks
	b)	The weekly demand for phones at B&M office supplies is normally distributed, with a mean of 2500 and a standard deviation of 500. The manufacturer takes two weeks to fill an order placed by the B&M manager. The store manager currently orders 10,000 phones when the inventory on hand drops to 6000. Evaluate the safety inventory and the average inventory carried by B&M. Also evaluate the average time a phone spends at B&M.	7 Marks

UNIT-III

5	a)	Elucidate the emerging technologies in supply chain management. Critically evaluate the role of information technology in overall performance of supply chain management.	7 Marks
	b)	Describe the necessary measures taken up by the management to increase total supply chain profits.	7 Marks
		(OR)	
6	a)	Discuss the role of IT in optimizing SCM.	7 Marks
	b)	Explain the concept of Standardization and Infrastructure.	7 Marks

UNIT-IV

7	a)	Discuss the six basic modes of transportation that a company can choose from.	4 Marks
	b)	Identify the role of transportation in creating a strategic fit between the company's supply chain and competitive strategies.	10 Marks
		(OR)	
8	a)	Explain which modes of transportation are best suited for large, low value shipments and justify your statement.	4 Marks
	b)	Illustrate the different design options for a transportation networks.	10 Marks

UNIT-V

9	a)	What are the advantages of third party logistics (3PL)? Name few companies which are working as 3PL.	7 Marks
	b)	Elaborate the role of forecasting in demand and supply planning in supply chain.	7 Marks
		(OR)	
10	a)	Explain why Global Outsourcing is an import function for a manufacturing unit.	7 Marks
	b)	'Managing a World Class Supply Chain Management Systems involves various challenges' explain your understanding on this.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

POWER PLANT ENGINEERING

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write a short note on Ash Handling systems.	7 Marks
	b)	What are the different methods of firing of coal?	7 Marks
		(OR)	
2	a)	Explain the working of Spreader strokers and Multi retort strokers with a neat sketch.	7 Marks
	b)	Write short notes on coal handling systems.	7 Marks

UNIT-II

3	a)	Give a detailed comparison of Gas turbine plant with Diesel and Thermal plants.	10 Marks
	b)	What is a combined cycle power plant? How are they advantageous over normal plants?	4 Marks
		(OR)	
4	a)	Explain the necessity of super charging of diesel engines and list its advantages.	8 Marks
	b)	Discuss about cooling and lubrication systems used in diesel power plants.	6 Marks

UNIT-III

5	a)	Enumerate essential components of Hydro-electric power plant and explain the functions of draft tube.	7 Marks
	b)	Explain various types of surge tanks.	7 Marks
		(OR)	
6	a)	How are nuclear reactors classified? With the aid of neat sketch, enumerate and explain essential components of nuclear reactor.	7 Marks
	b)	Describe the construction and working of pressurized water reactor with the help of neat diagram.	7 Marks

UNIT-IV

7	a)	What are the different forms of geothermal energy? Explain.	6 Marks
	b)	Explain principle of power generation from horizontal and vertical axis wind mills.	8 Marks
		(OR)	
8	a)	Explain the principle of working of MHD system. What are the problems encountered in its design?	6 Marks
	b)	What is a fuel cell? Explain the working of a fuel cell with a sketch.	8 Marks

UNIT-V

9	a)	Write short notes on various methods for reducing thermal pollution.	7 Marks
	b)	Explain: i) Load factor. ii) Demand factor. iii) Diversity factor.	7 Marks
		(OR)	
10	a)	Write short notes on pollution from nuclear power plant.	7 Marks
	b)	A power station has to supply load as follows:	7 Marks

Time (Hr)	0-6	6-12	12-14	14-18	18-24
Load (MW)	30	90	60	100	50

i) Draw the load curve. ii) Draw load duration curve. iii) Calculate load factor.

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CODE No.:14BT70331 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

OPTIMIZATION TECHNIQUES

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain various engineering applications of optimization. 7 Marks

b) Explain the classification of optimization problems. 7 Marks

(OR)

2 Use the Kuhn-Tucker conditions to solve the following non-linear programming problem. 14 Marks

Maximize $\mathbf{Z = 2X_1^2 + 12\ X_1\ X_2 - 7\ X_2^2}$

Subject to the constraints :

$\mathbf{2X_1 + 5X_2 \leq 98}$

$\mathbf{X_1, X_2 \geq 0}$

UNIT-II

3 Solve the following L.P.P by using Simplex method. 14 Marks

Min $\mathbf{z = 2x_1 + x_2}$

$\mathbf{3x_1 + x_2 = 3}$

$\mathbf{4x_1 + 3x_2 \geq 6}$

$\mathbf{x_1 + 2x_2 \leq 4}$

$\mathbf{x_1, x_2 \geq 0.}$

(OR)

4 Solve the following L.P.P by using Dual Simplex method. 14 Marks

Min $\mathbf{z = 4x_1 + 3x_2}$

$\mathbf{3x_1 + 4x_2 \geq 11}$

$\mathbf{3x_1 + x_2 \geq 5}$

$\mathbf{x_1 + x_2 \leq 7}$

$\mathbf{x_1, x_2 \geq 0.}$

UNIT-III

5 Obtain initial feasible solution using 14 Marks

i) North-West Corner Rule Method

ii) Least Cost Method

to the following transportation problem.

Factory	Warehouses				Quantity Available
X	30	20	50	20	150
Y	20	10	40	40	240
Z	20	30	40	30	210
Quantity Required	130	120	160	190	

(OR)

6 A Company has 5 jobs to be done. The following matrix shows the return in rupees on assigning machines to jobs. Assign 5 jobs to 5 machines so as to maximize the total expected profit. 14 Marks

		Jobs				
		A	**B**	**C**	**D**	**E**
Machines	**1**	5	11	10	12	4
	2	2	4	6	3	5
	3	3	12	5	14	6
	4	6	14	4	11	7
	5	7	9	8	12	5

UNIT-IV

7 Minimize the function $f(x) = x(x - 2)$ in the interval (0.4, 1.4) using Fibonacci method (take $n = 6$). 14 Marks

(OR)

8 Minimize the function $f(X_1, X_2) = X_1^2 - X_2^2 + X_1 - X_2$, starting from point $x_1 = \{0\ 0\}$ using Powell's Method. 14 Marks

UNIT-V

9 Use Dynamic programming to solve the following LPP. 14 Marks

Max $\mathbf{Z = 6x_1 + 7x_2}$

Subject to $\mathbf{2x_1 + 3x_2 \leq 12}$

$\mathbf{2x_1 + x_2 \leq 8}$ and $\mathbf{x_1, x_2 \geq 0}$.

(OR)

10 Find the shortest route through network whose nodes are distributed as shown in the following table. 14 Marks

Arc	1-2	1-3	2-3	2-4	2-5	3-4	3-5	3-6	4-5
Distance	1	2	1	5	2	2	1	4	3
Arc	4-6	4-7	5-6	5-7	6-7	6-8	7-8		
Distance	6	8	3	7	5	2	6		

CODE No.:14BT70401 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define and explain the following static characteristics of an instrument. i) Accuracy ii) Linearity iii) Stability iv) Resolution	8 Marks
	b)	A Voltmeter having a sensitivity of 30kΩ/V reads 80V on a 100V scale, when connected across an unknown resistor in series with a milli ammeter and the current through the milli ammeter is 2mA. Calculate the apparent and actual resistance of unknown resistor and percentage of error due to loading effect of voltmeter.	6 Marks

(OR)

2	a)	Design an Aryton shunt to provide an ammeter with current ranges 0-1mA, 10mA, 50mA, and 100mA using a D'Arsonval movement having an internal resistance of 100Ω and full scale deflections of 50μA.	6 Marks
	b)	Explain the operation of AC voltmeters using rectifiers.	8 Marks

UNIT-II

3	a)	Draw the block diagram of a function generator and explain its operation.	7 Marks
	b)	With a neat block diagram, explain the working of heterodyne wave analyzer.	7 Marks

(OR)

4	a)	Explain the principle and operation of a wave analyzer with neat diagrams.	7 Marks
	b)	Distinguish between logic analyzer and spectrum analyzer.	7 Marks

UNIT-III

5	a)	What are active probes used with CRO? Draw the circuit of a FET probe and explain.	8 Marks
	b)	Draw the basic block diagram of oscilloscope and explain the function of each block.	6 Marks

(OR)

6	a)	Explain the concept of storage oscilloscope along with circuit diagram.	7 Marks
	b)	Draw the circuit diagram of sampling oscilloscope and explain its operation in detail.	7 Marks

UNIT-IV

7	a)	Derive the balanced condition for modified Wheatstone bridge.	7 Marks
	b)	The arms of an AC Maxwell's bridge are arranged as follows AB and BC are non reactive resistors of 100Ω each. DA a standard variable reactor L_1 of resistance 32.7 Ω and CD consists of standard variable resistor R in series with a coil of the unknown impedance Z, balance was found with L_1=50mH and Z=1.36R. Find R and L of coil.	7 Marks

(OR)

8	a)	Derive the balance condition for Anderson's bridge.	7 Marks
	b)	Select various precautions to be taken while using X-Y recorder.	7 Marks

UNIT-V

9	a)	Explain in detail about Thermistors.	8 Marks
	b)	Explain multi channel Data Acquisition System.	6 Marks

(OR)

10	a)	Explain the generalized block schematic of Digital Data Acquisition System and list out its advantages over Analog Data Acquisition System.	8 Marks
	b)	What is LVDT? Write its merits and demerits. Discuss its two applications.	6 Marks

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

EMBEDDED SYSTEMS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define embedded systems and explain the main characteristics that distinguish them from other computing systems.	6 Marks
	b)	With an example, explain the design process of custom single purpose processors.	8 Marks
		(OR)	
2	a)	Explain briefly three main design technologies of embedded systems.	6 Marks
	b)	Describe the different ways of optimizing the design of single purpose processor.	8 Marks

UNIT-II

3	a)	Derive program state machine model for elevator controller.	8 Marks
	b)	Define system behavior with respect to dataflow model.	6 Marks
		(OR)	
4	a)	Discuss the methods of communication among processes with example.	7 Marks
	b)	Define the basic operations on processes derived by concurrent process model.	7 Marks

UNIT-III

5	a)	Compare advantages and disadvantages data transfers using serial and parallel ports.	6 Marks
	b)	Explain Fire Wire and USB bus standards.	8 Marks
		(OR)	
6	a)	Describe I^2C communication protocol.	7 Marks
	b)	Describe IrDA communication protocol and mention its applications.	7 Marks

UNIT-IV

7	a)	Explain how a semaphore can be used for inter task communication.	7 Marks
	b)	Compare the clock driven scheduling with event driven scheduling.	7 Marks
		(OR)	
8	a)	Describe the problem of priority inversion.	7 Marks
	b)	Explain the various applications of message queues.	7 Marks

UNIT-V

9	a)	Describe different ways of porting embedded software on to the target system.	6 Marks
	b)	Briefly explain different types of ARM instructions and distinguish between ARM mode and Thumb mode.	8 Marks
		(OR)	
10	a)	Explain the following terms. i) Cross Assembler. ii) Cross Compiler. iii) Linker. iv) In system Programming.	8 Marks
	b)	Explain the salient features of ARM processors.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

LIGHT WAVE COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State and derive Snell's Law.	6 Marks
	b)	Explain about various types of fiber materials.	8 Marks
		(OR)	
2	a)	Discuss briefly about fiber fabrication.	7 Marks
	b)	What is the basic principle of light propagation in optical fiber? Explain in detail.	7 Marks

UNIT-II

3	a)	What are linearly polarized modes? Explain in detail.	6 Marks
	b)	What do you understand by waveguide and material dispersion? Explain in brief.	8 Marks
		(OR)	
4	a)	Explain about stimulated brillouin scattering.	7 Marks
	b)	Explain about various types of bending losses.	7 Marks

UNIT-III

5		Discuss PIN and Avalanche photodiode.	14 Marks
		(OR)	
6	a)	Describe the phenomenon of polarization in optical fibers.	8 Marks
	b)	A 6km optical link consists of multimode step index fiber with a core refractive index of 1.5 and a relative refractive index difference of 1%. Estimate i) The delay difference between the slowest and fastest modes at the fiber output. ii) The RMS pulse broadening due to intermodal dispersion on the link. iii) The maximum bit rate that may be obtained without substantial errors on the link assuming only intermodal dispersion.	6 Marks

UNIT-IV

7	a)	Briefly describe adhesive splicing and no-adhesive quick splicing techniques.	7 Marks
	b)	Using a coherent detection, how optic frequency modulation is possible? Explain.	7 Marks
		(OR)	
8	a)	An LED has its 3-dB bandwidth equal to 80MHz. Its output optical power versus input current curve has a slope of 0.1 mW/mA. The input current consists of a 50mA **dc** component and a 40MHz sinusoid having a peak-to-peak current of 60 mA. i) Sketch a few cycles of the input current. ii) Compute the modulation factor for the input current. iii) Compute and plot the resulting optical power. iv) Compute the optic modulation factor.	8 Marks
	b)	Discuss about lensing schemes for coupling improvement.	6 Marks

UNIT-V

9	a)	Briefly outline the principle behind the SONET/SDH and its ring architecture.	7 Marks
	b)	Explain the basic procedure for the cyclic redundancy check (CRC) technique with commonly used polynomials and their binary equivalents for CRC generation.	7 Marks

(OR)

10	a)	Explain the principle of operation of formation of Bragg grating in a fiber core by means of two intersecting ultraviolet light beams.	7 Marks
	b)	Explain multi-channel A.M. and F.M techniques employed in broadband applications.	7 Marks

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

DIGITAL CMOS IC DESIGN

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the advantages and disadvantages of static CMOS circuit.	7 Marks
	b)	Explain the Domino Logic with an example.	7 Marks
		(OR)	
2	a)	Identify the steps involved in a CMOS P-well Process.	7 Marks
	b)	Derive the CMOS inverter DC characteristics and obtain the relationship for output voltage at different regions in the transfer characteristics.	7 Marks

UNIT-II

3	a)	With neat sketch explain three transistor DRAM cell.	6 Marks
	b)	What is meant by logical effort? Discuss the logical effort of a 3 input NAND and NOR gates.	8 Marks
		(OR)	
4	a)	Draw the six transistors CMOS SRAM cell and briefly explain WRITE, HOLD and READ operations.	8 Marks
	b)	Explain the power consumption in CMOS gates.	6 Marks

UNIT-III

5	a)	Explain the importance of various cost components involved in the IC fabrication.	7 Marks
	b)	Mention the specifications of ICs contained in its data sheets.	7 Marks
		(OR)	
6	a)	What do you understand from System On Chip?	7 Marks
	b)	Explain in detail about custom design flow.	7 Marks

UNIT-IV

7	a)	Describe he sheet resistance and standard unit of capacitance with different technology.	7 Marks
	b)	Calculate the sheet resistance for an NMOS inverter with $L_{pu}/W_{pu}=4/1$ and $L_{pd}/W_{pd}=1/1$.	7 Marks
		(OR)	
8	a)	Explain the need for layout design rules. Give CMOS based layout design rules.	7 Marks
	b)	Analyze the delay unit and Area Capacitance with an example.	7 Marks

UNIT-V

9	a)	How to implement ALU functions with adder?	7 Marks
	b)	What is Booth's algorithm and how is it helpful?	7 Marks
		(OR)	
10	a)	With the help of a schematic explain the principle of tree multiplier.	7 Marks
	b)	Compare Booth and modified Booth algorithms in all respects.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

TELECOMMUNICATION SWITCHING SYSTEMS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the working of cross bar switching with neat diagrams.	14 Marks
		(OR)	
2		Write in detail about Stored Program Control.	14 Marks

UNIT-II

3	a)	Explain the concept of Subscriber Loop systems.	8 Marks
	b)	Hierarchical structure is capable of handling heavy traffic. Justify.	6 Marks
		(OR)	
4	a)	Justify the usage of unigauge design to reduce diameter.	6 Marks
	b)	Explain the working of Echo Suppressor operation.	8 Marks

UNIT-III

5	a)	Illustrate different modes of operation of Common Channel Signalling.	8 Marks
	b)	Over a 20-minute observation interval, 40 subscribers initiate calls. Total duration of the calls is 4800 seconds. Calculate the load offered to the network by the subscribers and the average subscriber traffic.	6 Marks
		(OR)	
6	a)	Explain about the traffic load and grade of service.	7 Marks
	b)	Briefly explain about outband signalling scheme with E and M control.	7 Marks

UNIT-IV

7		Write short notes on i) Transmission channels. ii) User network interfaces of ISDN.	14 Marks
		(OR)	
8	a)	Mention ISDN standards and explain.	7 Marks
	b)	Write short notes on broadband ISDN.	7 Marks

UNIT-V

9		Write about i) SONET devices ii) Frame and iii) Frame transmission.	14 Marks
		(OR)	
10	a)	Discuss DSL Technology.	7 Marks
	b)	Explain HFC networks.	7 Marks

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

COMPILER DESIGN

[Computer Science and Engineering, Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the compiler construction tools.	7 Marks
	b)	Explain the input buffer scheme for scanning the source program. How the sentinels can improve its performance? Describe in detail.	7 Marks
		(OR)	
2	a)	Illustrate back end phases of a compiler with suitable example.	7 Marks
	b)	Explain in detail about recognition of Tokens.	7 Marks

UNIT-II

3	a)	What is Predictive LL(1)? Show that the given grammar is LL(1) or not. **S → iEts | iEtses | a E → b.**	7 Marks
	b)	Explain about ambiguous grammar and state the disambiguity rules.	7 Marks
		(OR)	
4	a)	Give the rules for computing FIRST and FOLLOW terms. Illustrate with an example.	7 Marks
	b)	Obtain LR(1) items for the grammar **S → L = R|R L → *R| id R → L.**	7 Marks

UNIT-III

5	a)	Explain Synthesized attributes and Inherited attributes with examples.	7 Marks
	b)	Write the syntax directed translation for the following grammar using postfix notation, syntax tree and Three address code: **E → E+T|T T→ T*F|F F→(E)|id.**	7 Marks
		(OR)	
6	a)	Describe the rules for type checking.	7 Marks
	b)	Describe the features of Functional overloading and Operational overloading.	7 Marks

UNIT-IV

7	a)	What is intermediate code and what is its purpose? Explain different forms of intermediate codes.	7 Marks
	b)	Explain how access to non local data on the stack.	7 Marks
		(OR)	
8	a)	Discuss runtime storage management in detail.	7 Marks
	b)	Define activation record. Explain the purpose of different field in an activation record.	7 Marks

UNIT-V

9	a)	What are the advantages of DAG representation? Give example.	7 Marks
	b)	What is Next use Information? Write an algorithm to determine the liveness and Next use Information for each statement in a basic block.	7 Marks
		(OR)	
10	a)	Write the simple code generation algorithm and generate the machine code for the Three address code **P:= A + B; Q:= C + D; R:= E - Q; S:= P - R.**	7 Marks

b) What are the difficulties in code generation? 7 Marks

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MOBILE COMPUTING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the process of authentication in a GSM service using block diagram.	7 Marks
	b)	What features of a GSM system are provided with the help of the SIM card in a mobile station?	7 Marks
		(OR)	
2	a)	What are the functions of using in-phase and quadrature pilots?	7 Marks
	b)	What are the various protocols used in WLL? What are the services provided by WLL?	7 Marks

UNIT-II

3	a)	What are narrow band and co-channel interferences? Describe DSSS technique. How does it mitigate narrow band interference?	7 Marks
	b)	List the basic features of CDMA system. Explain soft handover.	7 Marks
		(OR)	
4		Explain the use of multiple carriers by orthogonal coding. How does an OFDMA system differ from CDMA system? Where are the OFDM systems presently used?	14 Marks

UNIT-III

5	a)	Compare OSI and TCP/IP reference models.	6 Marks
	b)	Explain how route optimization is handled in mobile IP.	8 Marks
		(OR)	
6	a)	What are the special requirements in transport layer protocols in case of 2.5G/3G mobile networks?	4 Marks
	b)	Explain about the slow start and fast recovery methods used in congestion control by TCP.	10 Marks

UNIT-IV

7	a)	What is context-aware computing? List and explain the different context types in context-aware computing.	8 Marks
	b)	Compare Push based and Pull based data delivery mechanisms.	6 Marks
		(OR)	
8	a)	Justify the need for data recovery. Describe the steps involved in data recovery process.	6 Marks
	b)	Compare flat-disk, skewed-disk and multi-disc broadcast models. List the situations in which one is preferred over another.	8 Marks

UNIT-V

9	a)	What are the differences between PIM server and personal area synchronizer? Give an example of each.	7 Marks
	b)	What are the types of conflict resolution strategies used when there are conflicting data copies?	7 Marks
		(OR)	
10	a)	Describe CODA file system.	7 Marks
	b)	Compare the use of unicasting, multicasting and advertising in service discovery.	7 Marks

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

ADVANCED DATA STRUCTURES

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Illustrate the operations of a circular linked list with an example. 10 Marks

b) What are the advantages of circular linked lists over singly linked lists? 4 Marks

(OR)

2 a) Define doubly linked list and explain the operations of doubly linked list with neat sketch. 10 Marks

b) List the applications of linked lists. 4 Marks

UNIT-II

3 Consider a scheduler that schedules jobs to a processor on First Come First Serve basis. So, the job that arrives first will get processed first. Assume that the scheduler is modeled using two stacks named "incoming" and "outgoing". Following is the pseudo code that describes modeling of the scheduler. When a job arrives, its job id is pushed onto the "incoming" stack by using the push operation. When the processor completes the execution of current job, and if there is at least one job waiting, scheduler uses following operation to allot the job arrived first to the processor. 14 Marks

```
if (outgoing is empty) then
{
        while (incoming is not empty)
        {
tempobject = top(incoming)
pop(incoming);
push(tempobject, outgoing)
        }
}
scheduled_job = top(outgoing);
pop(outgoing)
```

Implement a scheduler using C language.

(OR)

4 a) What are the advantages of a circular queue when compared to a simple queue? Describe the insertion and deletion operations in a circular queue. 8 Marks

b) Explain any two queue applications. 6 Marks

UNIT-III

5 a) Given the following inorder and preorder traversals, trace the binary tree. 10 Marks

Inorder:	B	F	G	H	P	R	S	T	W	Y	Z
Preorder:	P	F	B	H	G	S	R	Y	T	W	Z

b) What is a Binary tree? List the representations of Binary Tree. 4 Marks

(OR)

6	a)	Define Binary Search Tree and explain the routine for insert operation of Binary search tree.	7 Marks
	b)	Construct a Binary Search Tree with the following data: 55, 30, 60, 10, 35, 70, 65, 08, 100, 58.	7 Marks

UNIT-IV

7	a)	Explain About Red-Black Trees.	7 Marks
	b)	Discuss how single and double rotations performed in AVL trees. Give some applications of AVL tree.	7 Marks

(OR)

8	a)	Explain about tree traversal algorithms.	7 Marks
	b)	Describe height of B-Tree.	7 Marks

UNIT-V

9	a)	Discuss in detail about different open addressing methods.	7 Marks
	b)	Write a C program for implementing any one of the open addressing methods.	7 Marks

(OR)

10		Write a procedure for implementing chaining and explain your procedure with examples.	14 Marks

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

ANALYTICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the operation of null detector type pH meter.	7 Marks
	b)	Explain the operation of sodium analyzer.	7 Marks
		(OR)	
2	a)	Describe the operation of high frequency method for conductivity measurement.	7 Marks
	b)	Explain the operation of combination electrode used in pH measurement.	7 Marks

UNIT-II

3		Mention the list of pollution monitoring devices and elaborate any two in detail.	14 Marks
		(OR)	
4	a)	Discuss a method for carbon monoxide analysis.	7 Marks
	b)	Explain working of the H_2S analyzer system with neat sketch.	7 Marks

UNIT-III

5	a)	Describe the operation of flame ionization detector used in gas chromatography.	7 Marks
	b)	Explain the operation of thermal detector used in liquid chromatography.	7 Marks
		(OR)	
6		Describe the operation of liquid chromatography with an example.	14 Marks

UNIT-IV

7	a)	Explain different detectors used in UV and Visible Spectrophotometers.	7 Marks
	b)	Illustrate the construction and working of Flame Photometer.	7 Marks
		(OR)	
8	a)	Explain in detail about Atomic absorption spectrometer with a neat diagram.	7 Marks
	b)	Describe the working of single beam and double beam null type UV-Visible Spectrophotometers with neat diagrams.	7 Marks

UNIT-V

9	a)	Write short notes on the Scintillation counter and Proportional counter.	7 Marks
	b)	Explain the construction and working principle of NMR spectrometer.	7 Marks
		(OR)	
10	a)	Explain in detail about time of flight mass spectrometer.	7 Marks
	b)	Discuss the working principle of GM counter and give its applications.	7 Marks

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

BIOMEDICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about the resting and action potentials.	7 Marks
	b)	Describe about the Bio potential electrodes.	7 Marks
		(OR)	
2	a)	List out the problem encountered in measuring living system.	7 Marks
	b)	Explain about the skin contact impedance.	7 Marks

UNIT-II

3	a)	Draw and explain the normal wave pattern of an ECG waveform recorded in the standard lead position.	6 Marks
	b)	Explain about the electrical conduction system of the heart.	8 Marks
		(OR)	
4		Discuss how the blood pressure is measured using pressure measuring system by direct method.	14 Marks

UNIT-III

5	a)	Explain about physiology of nervous system.	7 Marks
	b)	List out the specifications of EEG.	7 Marks
		(OR)	
6		Explain in detail about basic spirometer.	14 Marks

UNIT-IV

7	a)	Differentiate between internal and external pacemaker.	7 Marks
	b)	Describe about fixed rate pacemaker.	7 Marks
		(OR)	
8		Explain about Hemo dialysis and Peritoneal dialysis.	14 Marks

UNIT-V

9		Explain how the Doppler principle is involved in ultrasonic imaging and discuss about the different model of display.	14 Marks
		(OR)	
10		Explain in detail about the MRI Imaging system.	14 Marks

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

LOGIC AND DISTRIBUTED CONTROL SYSTEMS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	With a neat block diagram, explain various components of PLC.	7 Marks
	b)	Explain the architecture of PLC with neat diagram.	7 Marks
		(OR)	
2		Explain the principles OSI model in PLC network communication.	14 Marks

UNIT-II

3	a)	Briefly explain about input units of PLC.	7 Marks
	b)	Summarize about signal conditioning in PLC.	7 Marks
		(OR)	
4	a)	List and explain about remote connections with neat diagrams.	7 Marks
	b)	Write short notes on: i) MAP ii) Ethernet	7 Marks

UNIT-III

5	a)	Explain about different function blocks used in PLC Ladder programming.	7 Marks
	b)	Write about any three data manipulation instructions with examples.	7 Marks
		(OR)	
6	a)	In an automatic stacking process, conveyor M1 is used to stack metal plates on to conveyor M2. The photo electric sensor provides an input pulse to the PLC counter each time a metal plate drops from conveyor M1 to M2. When 15 plates have been stacked, conveyor M2 is activated for 15 sec. by the PLC and the process repeats. The process is started by a manual start / stop station (using Pushbuttons). Design a PLC ladder diagram for the above application.	8 Marks
	b)	Explain the operation of different counters and associated programmable bits with the help of timing diagrams.	6 Marks

UNIT-IV

7	a)	How to select topology and communication protocol of process control application?	7 Marks
	b)	Mention the role of general purpose computers in DCS.	7 Marks
		(OR)	
8	a)	Explain the importance of local unit in DCS.	7 Marks
	b)	Explain about DCS integration with PLC's and computers.	7 Marks

UNIT-V

9	a)	How a Profibus and Foundation Field bus are differ in the Process Industry?	7 Marks
	b)	How the communication objects in Profibus are configured using Object Dictionary (OD) structure?	7 Marks
		(OR)	
10	a)	Explain the operating conditions of HART Protocol.	7 Marks
	b)	Distinguish the Application layer and User layer of Foundation Field bus.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

MOBILE APPLICATION DEVELOPMENT

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the Architecture of Android with neat diagram.	8 Marks
	b)	Discuss the Information Design Tools.	6 Marks
		(OR)	
2	a)	What is Android and its features?	6 Marks
	b)	How users can move through and use application features?	8 Marks

UNIT-II

3	a)	How to manage the changes to screen orientation? Explain.	7 Marks
	b)	Illustrate various components of a screen.	7 Marks
		(OR)	
4	a)	Describe about calling built-in applications using intents.	7 Marks
	b)	Discuss the process of design android user interface.	7 Marks

UNIT-III

5	a)	Write program to perform regular operations on a table.	7 Marks
	b)	Define View. Explain various types of Views.	7 Marks
		(OR)	
6	a)	Discuss about picker views with examples.	7 Marks
	b)	Describe the steps for retrieving and modifying the preferences.	7 Marks

UNIT-IV

7	a)	Explain how to send email messages from your Android App.	7 Marks
	b)	What are the ways in which you can send SMS message in your Android App?	7 Marks
		(OR)	
8	a)	Write an Android App how to display and switching another Google Map.	7 Marks
	b)	Explain how to connect to the web application using HTTP in you Android App.	7 Marks

UNIT-V

9	a)	What is a service? How to create My Service in your Android App explain with example.	7 Marks
	b)	Discuss how an activity and service communicate in your Android App.	7 Marks
		(OR)	
10	a)	Explain different iOS tools and how to use in your iOS App.	7 Marks
	b)	Discuss the iOS debugging App steps with an example.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

MULTIMEDIA AND APPLICATION DEVELOPMENT

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe about multimedia authoring tools.	7 Marks
	b)	Describe the different types of video signals.	7 Marks
		(OR)	
2	a)	Define and discuss about the terms SNR and SQNR.	7 Marks
	b)	Discuss in detail about GIF file format.	7 Marks

UNIT-II

3	a)	Describe about Bound methods in Action Script.	7 Marks
	b)	Write about associative arrays and objects.	7 Marks
		(OR)	
4	a)	Write about overloading of methods in Action Script.	7 Marks
	b)	Write a program that shows the usage of data types.	7 Marks

UNIT-III

5		Define Exception. Differentiate it with compile time errors and also give one example in Action Script.	14 Marks
		(OR)	
6	a)	Describe about mouse event classes in Action Script.	7 Marks
	b)	Explain the polymorphism and dynamic binding in Action Script.	7 Marks

UNIT-IV

7	a)	Explain Huffman coding algorithm with example.	7 Marks
	b)	Explain Discrete Cosine Transform with example.	7 Marks
		(OR)	
8	a)	Explain JPEG encoder with block diagram.	7 Marks
	b)	Write short notes on MPEG 1 video coding.	7 Marks

UNIT-V

9		Write short notes on:	
		i) File Formats.	7 Marks
		ii) Signal to Noise Ratio.	7 Marks
		(OR)	
10		Write short notes on:	
		i) Multimedia over ATM Networks.	7 Marks
		ii) Media-On-Demand.	7 Marks

CODE No.:14BT71202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

MULTIMEDIA AND APPLICATION DEVELOPMENT

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail about color models in images.	7 Marks
	b)	Explain the overview of multimedia software tools.	7 Marks
		(OR)	
2		Explain Nyquist theorem. Calculate the number of bits per second required for 4KHz speech signal sampled at the Nyquist rate.	14 Marks

UNIT-II

3		Describe OOP Application Framework.	14 Marks
		(OR)	
4	a)	Write an example program to illustrate Constructor functions.	7 Marks
	b)	Differentiate the usage of Accessor methods and Setter & Getter methods with a suitable example for accessing private data.	7 Marks

UNIT-III

5	a)	What is a package? Explain about package access and class path.	7 Marks
	b)	Discuss about Exception Handling and Nested Exceptions.	7 Marks
		(OR)	
6	a)	Write a short note on OOP Application Development.	7 Marks
	b)	Describe about ***MovieClip*** subclass.	7 Marks

UNIT-IV

7	a)	Explain the layers of MPEG-1 video bit stream.	7 Marks
	b)	Compare and contrast MPEG-1 and MPEG-2.	7 Marks
		(OR)	
8	a)	What are the advantages and disadvantages of Arithmetic Coding as compared to Huffman Coding?	7 Marks
	b)	Describe lossless JPEG compression algorithm.	7 Marks

UNIT-V

9	a)	Discuss various parameters to improve the quality of multimedia data transmission.	6 Marks
	b)	Explain RSVP and RTSP in detail.	8 Marks
		(OR)	
10	a)	Write short notes on ATM Adaption layer and multicast over ATM.	7 Marks
	b)	List various broadcast schemes for video-on-demand and explain any two of them.	7 Marks

CODE No.:14BT71203 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

SCRIPTING LANGUAGES

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the role of Scripting Languages in developing web pages.	6 Marks
	b)	What is a regular expression? Write any five regular expression symbols and describe their uses in pattern matching.	8 Marks
		(OR)	
2	a)	Discuss in detail about the different operators used in PERL. Explain the Hashes and Lists with suitable examples.	8 Marks
	b)	Explain how to handle strings in PERL scripts. Write a PERL program using matching operation to determine if a string is a substring within another string.	6 Marks

UNIT-II

3		Discuss in detail about files in PERL.	14 Marks
		(OR)	
4	a)	Explain about “Dirty hands” internet programming.	7 Marks
	b)	Discuss the history and features of Python.	7 Marks

UNIT-III

5	a)	Create a text files that prompts the user for each line of text and writes the results to a file.	7 Marks
	b)	Explain in detail about memory management in Python.	7 Marks
		(OR)	
6	a)	Identify the standard type built-in functions in Python.	7 Marks
	b)	Give example for numbers, integers in Python.	7 Marks

UNIT-IV

7	a)	Develop a program to check the number is even or odd.	7 Marks
	b)	Develop a program to find the factorial of a number.	7 Marks
		(OR)	
8		Explain Exception handling mechanism in Python.	14 Marks

UNIT-V

9	a)	Explain about nested functions in Python.	7 Marks
	b)	Examine the passing functions in Python.	7 Marks
		(OR)	
10	a)	Discuss about packages in Python.	7 Marks
	b)	Distinguish path search and search path.	7 Marks

CODE No.:14BT71204 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

SOFTWARE TESTING TECHNIQUES

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define software testing and mention the principles of software testing.	7 Marks
	b)	Give salient features of good testing.	7 Marks
		(OR)	
2	a)	List the challenges in testing.	7 Marks
	b)	Mention the differences between defect, error and mistake in software with examples.	7 Marks

UNIT-II

3	a)	Enumerate the process of verification. List out its advantages and disadvantages.	7 Marks
	b)	Explain different ways of assessing coverage in verification.	7 Marks
		(OR)	
4	a)	Describe in detail various validation activities associated with different phases of software development.	7 Marks
	b)	Explain different techniques for finding defects.	7 Marks

UNIT-III

5	a)	Explain the path testing strategies with an example.	7 Marks
	b)	Discuss about transaction-flow testing techniques.	7 Marks
		(OR)	
6		Define Data flow graph. Explain different types of anomalies present in the data flow graph.	14 Marks

UNIT-IV

7	a)	Apply Logic Based Testing using Decision Tables for any application.	8 Marks
	b)	Distinguish between good state graphs and bad state graphs.	6 Marks
		(OR)	
8		Write short notes on: i) Path Products. ii) Path Sum. iii) Path Expression.	14 Marks

UNIT-V

9	a)	When to use automation in testing? Discuss the problems.	7 Marks
	b)	Distinguish between static and dynamic testing tools.	7 Marks
		(OR)	
10	a)	Mention the characteristics of good test scenario and good test case.	7 Marks
	b)	Briefly give an account to build test data.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

MACHINE LEARNING

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the Candidate-Elimination algorithm with Version Spaces.	7 Marks
	b)	Define a well posed learning problem. Explain any two successful applications of machine learning.	7 Marks
		(OR)	
2	a)	Demonstrate the process of choosing the best classifier attribute in ID3 algorithm with a suitable example.	7 Marks
	b)	Explain Find-S algorithm for finding a maximally specific hypothesis.	7 Marks

UNIT-II

3		What is multilayer perceptron? Enumerate and explain steps in back propagation algorithm use to train network.	14 Marks
		(OR)	
4		Explain Genetic Algorithm with steps using the population and fitness function.	14 Marks

UNIT-III

5	a)	Write the Naïve-Bayes algorithm for classifying text.	7 Marks
	b)	Describe Expectation-Maximization algorithm.	7 Marks
		(OR)	
6	a)	Explain maximum likelihood and least-squared error hypothesis.	7 Marks
	b)	Describe the Mistake Bound model in detail.	7 Marks

UNIT-IV

7	a)	What is curse of dimensionality problem? Briefly explain the approaches to overcome this problem.	6 Marks
	b)	Write the FOIL algorithm for learning rule sets and explain the purpose of outer loop and the function of inner loop.	8 Marks
		(OR)	
8	a)	Describe ***k-Nearest Neighbour*** learning algorithm for continuous valued functions. Discuss one major drawback of this algorithm and how it can be corrected.	8 Marks
	b)	Outline the Concept Induction as Inverted Deduction.	6 Marks

UNIT-V

9		Explain Briefly	
		i) Reinforcement Learning.	7 Marks
		ii) Explanation Based Learning.	7 Marks
		(OR)	
10		Describe the first order Combined Learner Algorithm.	14 Marks

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CODE No.:14BT71501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

EMBEDDED SYSTEM PROGRAMMING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Classify the Embedded Systems based on processors used and tools required for the design. Give examples for each.	6 Marks
	b)	Justify your Selection of the hardware units and software components in the design of smart phone.	8 Marks
		(OR)	
2	a)	Give the hardware and software components of a digital camera.	7 Marks
	b)	Classify the processor used in the embedded systems with examples.	7 Marks

UNIT-II

3	a)	With a neat diagram explain about 8051 micro controller and its hardware.	8 Marks
	b)	What flags and registers are available in 8051? Explain.	6 Marks
		(OR)	
4	a)	List out the addressing modes and I/O port in a micro controller.	8 Marks
	b)	Discuss Arithmetic and Logic instructions with suitable examples.	6 Marks

UNIT-III

5	a)	Describe file and I/O subsystems management in RTOS.	7 Marks
	b)	Discuss about different Timer and Event functions in RTOS.	7 Marks
		(OR)	
6		Discuss the following concepts i) Semaphore functions. ii) Shared data. iii) Pipe functions.	14 Marks

UNIT-IV

7	a)	Illustrate DFG model program for saving a picture in Digital Camera	8 Marks
	b)	Discuss the advantages of assembly language programming.	6 Marks
		(OR)	
8	a)	Discuss state machine model with an example.	6 Marks
	b)	Discuss the Creation of Concurrent processes in ACVM.	8 Marks

UNIT-V

9		Discuss about the tool chain for building the embedded systems software with a neat sketch.	14 Marks
		(OR)	
10		Discuss about ROM Emulator with a neat sketch.	14 Marks

CODE No.:14BT71502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

NETWORK PROGRAMMING

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the layers in a network with the approximate mapping to the Internet Protocol suite.	7 Marks
	b)	Discuss about TCP three-way handshake through its state transition diagram.	7 Marks
		(OR)	
2	a)	Explain with a neat sketch on how socket address structure passed from process to kernel and vice versa.	7 Marks
	b)	Describe how concurrent server handles multiple clients at the same time.	7 Marks

UNIT-II

3	a)	Elaborate process of handling POSIX sigaction function.	7 Marks
	b)	How do you handle the situation in which a server host is crashed?	7 Marks
		(OR)	
4	a)	List out various I/O models that are available in UNIX.	7 Marks
	b)	Discuss about IPv6 socket options.	7 Marks

UNIT-III

5	a)	Discuss in detail about lack of flow control with UDP.	7 Marks
	b)	Explain how to determine outgoing interface with UDP.	7 Marks
		(OR)	
6	a)	Illustrate briefly UDP echo server.	7 Marks
	b)	Discuss in detail about Domain Name System.	7 Marks

UNIT-IV

7	a)	Illustrate through an example how pipes are used for client server application.	7 Marks
	b)	What is system VIPS? Discuss about the *ipc_perm* structure with its members.	7 Marks
		(OR)	
8		Discuss in detail about the message queue structure and various functions for manipulating message queues.	14 Marks

UNIT-V

9	a)	Explain the steps that normally take place in RPC with a diagram.	7 Marks
	b)	Discuss about terminal modes.	7 Marks
		(OR)	
10	a)	Describe the transparency issues in remote procedure call.	7 Marks
	b)	Explain control terminals.	7 Marks

CODE No.:14BT71504 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

SIMULATION AND MODELING

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Describe the issues in the evaluation and selection of simulation software. 7 Marks

b) Describe the time advance algorithm. 7 Marks

(OR)

2 A small grocery store has only one checkout counter. Customers are arriving at this checkout counter at random times that are from 1 to 8 minutes apart. Each possible value of inter arrival time has the same probability of occurrence. The service times vary from 1 to 6 minutes with the following probability. 14 Marks

Service time (Minutes)	1	2	3	4	5	6
Probability	0.10	0.20	0.30	0.25	0.10	0.05

Simulate the arrival and service of 10 customers.

UNIT-II

3 a) What is a Poisson distribution? What is its mean and variance? 7 Marks

b) Find the mean and variance of a continuous random variable with its probability density function as follows: 7 Marks

$f(x) = \frac{1}{2} e^{-x/2}$ **if** $x \geq 0$.

$= 0$ **otherwise**

(OR)

4 Suppose arrivals to a post office occur at a rate of 2 per minute from 8pm until 12pm then drop to 1 every 2 minutes until the day ends at 4pm .What is the probability distribution of no .of arrivals between 11am and 2pm using non stationary Poisson process? 14 Marks

UNIT-III

5 Discuss about characteristics of a queuing system. 14 Marks

(OR)

6 a) Consider a physician who schedules patients every 10 minutes and who spends S_i minutes with the i^{th} patient where 7 Marks

$$S_i = \begin{cases} 9 \text{ min with probability } 0.9 \\ 12 \text{ min with probability } 0.1 \end{cases}$$

Find the mean and variance.

b) Describe network of queues. 7 Marks

UNIT-IV

7 a) Describe the errors associated with the generation of Pseudo- Random numbers. 7 Marks

b) Generate five random numbers with the seed value - 27, multiplier-17, increment 7 Marks

-43 and modulus-100 using Linear Congruential method.

(OR)

8	a)	Describe Acceptance- Rejection technique to generate random variates.	7 Marks
	b)	Describe the method of generating exponential variates using Inverse Transform technique.	7 Marks

UNIT-V

9	a)	Discuss about Chi-Square test applied to Poisson assumption for goodness of it?	7 Marks
	b)	Discuss about AR[1] model.	7 Marks

(OR)

10		State output analysis for steady state simulations.	14 Marks

CODE No.:14BT81202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

CRYPTOGRAPHY AND NETWORK SECURITY

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain OSI based Network Security Model.	7 Marks
	b)	Find Cipher Text to the Plain Text (PT) = "HELLO WORLD" using i) Play fair with key = "WELCOME" ii) Caesar Cipher iii) Hill Cipher key = $\begin{matrix} 2 & 1 \\ 3 & 4 \end{matrix}$.	7 Marks

(OR)

2	a)	Discuss the following terms in detail with relevant examples: i) Confidentiality ii) Integrity iii) Non Repudiation	6 Marks
	b)	Explain Transposition techniques with example.	8 Marks

UNIT-II

3	a)	Explain the principles of Block Cipher designing.	7 Marks
	b)	Perform the RSA algorithm on the given data and explain how encryption and decryption are performed on the message: $p = 3, q = 5; M = 2$.	7 Marks

(OR)

4	a)	Discuss about the principles of public key crypto systems.	6 Marks
	b)	Users A and B use the Diffie-Hellman key exchange technique with a common prime q=71 and a primitive root a=7. i) If user A has private key XA=5, what is A's public key YA? ii) If user B has private key XB=5, what is B's public key YB? iii) What is shared secret key?	8 Marks

UNIT-III

5	a)	Define authentication. Explain HMAC algorithm.	9 Marks
	b)	Explain the security of Hash functions and MACs.	5 Marks

(OR)

6	a)	How digital signature is generated? Explain DSA algorithm in detail.	7 Marks
	b)	Differentiate Kerberos version 4 and version 5.	7 Marks

UNIT-IV

7	a)	How E-mail security is provided using PGP?	10 Marks
	b)	Write short notes on S/MIME functionality.	4 Marks

(OR)

8	a)	Who are the participants of SET? Explain complete transactions of SET.	10 Marks
	b)	Write the services provided by SSL record protocol.	4 Marks

UNIT-V

9	a)	Discuss about the configuration of firewalls.	7 Marks
	b)	Explain various types of viruses and Virus Immune detection system.	7 Marks
		(OR)	
10	a)	Explain the principles followed to select, manage and protect the password.	7 Marks
	b)	Explain in detail about IDS.	7 Marks

CODE No.:14BT81503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular Examinations November - 2017

HUMAN COMPUTER INTERACTION

[Computer Science and Engineering, Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Discuss the importance of good design with suitable examples.	14 Marks
		(OR)	
2	a)	Summarise the benefits of good design with suitable examples.	7 Marks
	b)	State the reasons for which web interface has become popular.	7 Marks

UNIT-II

3	a)	Explain the important human characteristics which have influence on interface and screen design.	7 Marks
	b)	What is meant by basic business functions? Discuss in detail the process of determining basic business functions.	7 Marks
		(OR)	
4	a)	Analyze the user's physical characteristics.	7 Marks
	b)	Discuss in detail the guidelines for designing conceptual models.	7 Marks

UNIT-III

5		Summarize the problems with search facilities and explain guidelines for search facility.	14 Marks
		(OR)	
6	a)	Justify the importance of screen navigation and flow, visually pleasing composition that makes an interface easy and pleasant to use.	7 Marks
	b)	Discuss the significance of data presentation, scales and scaling, labelling components of a statistical graphic.	7 Marks

UNIT-IV

7	a)	Compare and contrast screen based controls and device based controls.	7 Marks
	b)	Explain various components of a window.	7 Marks
		(OR)	
8	a)	Explain various guidelines for presenting error messages on web.	7 Marks
	b)	What is an icon? Explain various types of icons.	7 Marks

UNIT-V

9		Discuss various software engineering tools used for creating user interface.	14 Marks
		(OR)	
10	a)	Compare and contrast the characteristics of various pointing devices.	7 Marks
	b)	Write short note on drivers.	7 Marks

CODE No.:10BT40502 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

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) Differentiate between Procedure oriented and Object oriented programming paradigms.
b) What is friend function? List the characteristics of a friend function.

2. a) What are the different types of inheritance?
b) Explain streams in C++.

3. a) Why ragged array concepts are used in JAVA? Discuss ragged array using a suitable JAVA program.
b) Distinguish the terms final and finally.

4. What is interface? Explain interface with example code.

5. a) Write a program code for divide by zero exception handling in JAVA.
b) Explain in detail about packages.

6. a) Write a program to show how to create a child frame window from within an applet.
b) Define the term event. Describes the roles of sources and listeners.

7. a) Explain adapter classes in detail.
b) What is Menu bars and Menus?

8. a) Write a JAVA program for font size selection with a set of radio buttons.
b) Explain MVC architecture in detail.

CODE No.:10BT70101 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

REMOTE SENSING AND GIS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the concept of stereoscopic measurement.
b) Calculate the height of a lamp post for which parallax is 30mm. Consider flying height 1200m, air base 600m and focal length 0.1524mm.

2. a) Describe the principle of Remote Sensing with the help of neat sketch.
b) Explain the along track operation of scanner.

3. a) Discuss the interpretation of aerial photo in detail.
b) Write about various platforms and scanners adopted in Indian Satellite Missions.

4. a) What is GIS? Give detailed notes on hardware components, software components of GIS.
b) Describe different categories of GIS.

5. a) Define projection system in GIS. Discuss in brief about Polyconic and UTM Projection.
b) Explain the working principles of GPS.

6. a) Describe vector overlay with examples. What is a metadata? Mention its role in GIS.
b) Explain the terms Vector data storage and Attribute data storage.

7. Enumerate the steps involved in Land use and Land cover mapping by using Remote Sensing and GIS technique.

8. Discuss the role of Remote Sensing and GIS in Soil Erosion and Reservoir Sedimentation studies.

CODE No.:10BT70303 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

FINITE ELEMENT METHODS

[Mechanical Engineering]

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

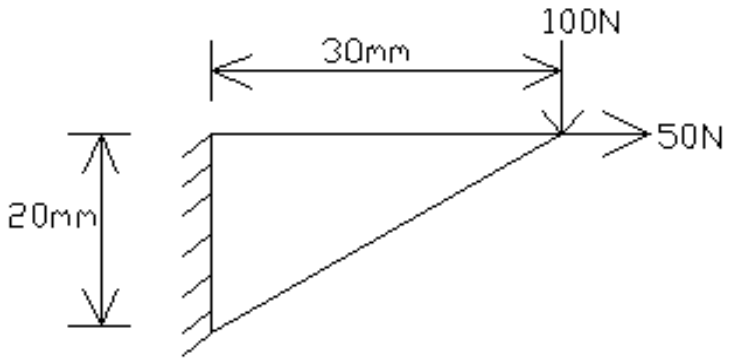
Answer any FIVE questions
All questions carry equal marks

1. a) List the steps involved in FEM and explain them briefly.
b) In a plain strain problem, σ_x=12000MPa, σ_y=1000MPa, E=210 GPa and ν =0.28. Determine the value of the stress σ_z .

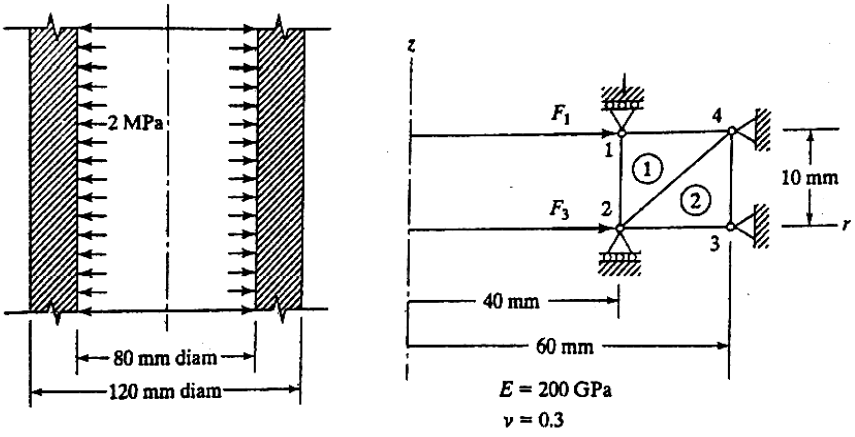
2. Derive the element stiffness matrix for a quadratic one dimensional bar element.

3. A cantilever beam of length 3.4m has an elastic spring support of stiffness 230kN/m at its free end, where a point load of 13kN acts. Take Young's modulus as 200GPa and area moment of inertia of the cross-section as 1×10^{-4} m^4. Determine the displacement and slope at the node and reactions.

4. For a triangular plate shown in the figure, determine the deflection at the point of load using one triangular element. Thickness is 10mm, $E = 70 \times 10^3$ MPa, $\mu = 0.3$.



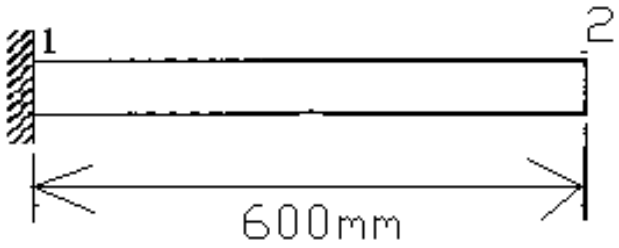
5. A long cylinder of inside diameter 80mm and outside diameter 120mm snugly fits in a hole over its full length. The cylinder is then subjected to internal pressure of 2MPa. Using two elements on the 10mm length shown, find the displacement at the inner radius.



6. Derive the element conduction matrix and equations for a two dimensional heat-transfer problem.

7. Explain the basic differential equations for fluid flow problems, its one dimensional formulation and corresponding finite element equations and also method of solving by taking a suitable example.

8. Determine the lowest Eigen value and corresponding mode for the beam shown in the figure. Take E = 200GPa, $\rho = 7840 kg/m^3$, $I = 2000 mm^4$, $A = 240 mm^2$.



CODE No.:10BT71201 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

WEB PROGRAMMING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain 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. How is XML different from HTML? Elucidate with an example.

4. What is a Servlet? Explain lifecycle of a Servlet. Illustrate with an example program.

5. a) Discuss about prepared statements.
b) Write a note on *java.sql.Driver* class.

6. a) What are JSP declaratives?
b) Explain the forward tag of a JSP with an example.

7. What is a *JavaBean* and how do you declare in JSP page?

8. a) Write a note on custom tag libraries.
b) Give benefits of using custom tag libraries.

CODE No.:10BT71202 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

MOBILE COMPUTING

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With the help of neat sketch, explain in detail about GSM architecture.
b) Give the devices in mobile computing and explain them.

2. What is CDMA? Explain the basic function of CDMA with an example.

3. a) Explain the user scenarios for wireless piconet.
b) Write a short note on medium access control mechanisms in Bluetooth.

4. Write a short note about Indirect-TCP and Mobile-TCP.

5. Explain the architecture of distributed data caches in mobile devices.

6. Explain in detail about pull based mechanisms.

7. a) Distinguish between any two routing algorithms in MANET.
b) Mention the properties and applications of MANET.

8. Explain the wireless datagram and transaction protocol in WAP.

CODE No.:10BT71203 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

MULTIMEDIA AND APPLICATIONS DEVELOPMENT

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the various types of images.
b) Discuss the various popular file formats.

2. Explain the process of analog to digital conversion and illustrate the problems encountered with respect to quality of data retrieval.

3. a) Explain the use of constructor function.
b) What is static type? Explain.

4. a) Explain about Package in detail. Give example.
b) Explain about Exceptions.

5. Explain the Basic Directory structure used in Action Script application framework.

6. a) What is lossy and loss less compression.
b) Explain Arithmetic coding and Run length coding.

7. a) Explain about Audio Compression technique ADPCM in speech coding.
b) Explain about Video Compression based on Motion Compensation.

8. Discuss the following protocols:
i) RSVP. ii) RTSP.

CODE No.:10BT71204 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

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) What are the requirements and applications of public key cryptography?
b) Write short notes on digital certificates.

4. a) Explain content formats and transfer encodings of MIME.
b) What are the different approaches to public key management?

5. a) Explain about IPSEC services.
b) Explain about ESP format in IP security.

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) Explain the characteristics of a good firewall implementation.
b) What is a trojan horse defense?

CODE No.:10BT71208 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

SOFTWARE PROJECT MANAGEMENT

[Information Technology, Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Describe the methods used in managing the development of large scale software systems.

2. a) Explain the principles of modern software management.
b) List out general quality improvement with a modern process.

3. Describe the artifacts captured in the management set.

4. Define workflow. Explain about software process workflow.

5. a) Discuss about work breakdown structures.
b) Explain about software process workflows.

6. Discuss about project organizations and responsibilities.

7. a) What is a metric? Explain reliability metrics.
b) Explain the advantages of measurement.

8. a) Discuss about the progress profile of a modern project.
b) Explain risk management of CCPDS-R.

CODE No.:10BT71501 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2018

NETWORK PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain TCP/IP layering in detail with a neat sketch.
b) List and explain limitations on buffer sizes.

2. a) Discuss in detail the parameters of the functions : **Socket()**, **Connect()**, **Bind()** and also explain the error possibilities.
b) Briefly describe concurrent servers.

3. Explain TCP echo server functions.

4. a) Specify the scenario where networking applications can be done using I/O multiplexing.
b) Discuss IPv6 socket options.

5. a) Explain the purpose and usage of UDP sockets and their different functions.
b) Brief the way in which a TCP client server different from UDP client server.

6. Explain in detail DNS.

7. Explain the concept of IPC using message queues.

8. a) What is terminal line discipline?
b) Explain RPC.

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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) Discuss critically the systems approach to Management.
b) Explain the social responsibilities of Management.

2. a) What do you understand by Decentralization?
b) What do you understand by Departmentation?

3. a) List and explain the steps involved in work-measurement.
b) Enumerate the factors affecting quality. How to overcome them?

4. a) What is ABC analysis? Explain with an example.
b) What are the types of inventory? Explain their importance.

5. a) Discuss Theory X and Theory Y as applicable to understanding of human behaviour.
b) Explain the meaning and purpose of Job Evaluation. Enumerate the different methods of Job Evaluation.

6. The data for the duration and cost of each activity are given in the table below. The indirect cost of project is Rs.3000 per week. Determine the optimum duration of the project and the corresponding minimum cost.

Activity	Normal time (weeks)	Normal cost (Rs.)	Crash time (weeks)	Crash cost (Rs.)
1-2	6	7000	3	14,500
1-3	8	4000	5	8500
2-3	4	6000	1	9000
2-4	5	8000	3	15,000
3-4	5	5000	3	11,000

7. a) What do you mean by an Entrepreneur? Bring out the factors that create a conducive environment for Entrepreneurship.
b) Explain the social responsibilities of Entrepreneur.

8. a) Identify the three key supply chain decision phases and explain the significance of each one.
b) Discuss the impact of information technology in managerial decision making.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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) Explain the different polymorphism techniques in C++.
b) Explain virtual base class and function overriding.

3. a) Write a Java program to arrange 30 random numbers in a triangular array.
b) Write a Java program uses big numbers to compute the odds of winning the grand prize in a lottery.

4. a) Explain member access rules. Explain the usage of final in inheritance.
b) How can you define and implement an interface?

5. a) What is a package? How can you create and access a package?
b) Briefly explain i) try ii) catch iii) throw

6. a) How does multithreading differ from multitasking?
b) How can you pass the parameters to applets?

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.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

PRINCIPLES OF COMMUNICATIONS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Find convolution of two continuous time signals

$x(t) = 3\cos 2t$ for all t

$y(t) = e^{t} \quad t < 0$

$e^{-t} \quad t \geq 0$

b) State and prove any three Fourier Transform properties.

2. a) Explain the indirect method of generation of FM waves.
b) Compare AM, FM and PM Modulations.

3. a) State and explain the Sampling theorem for low pass signals.
b) Compare TDM and FDM systems and explain merits and demerits of each system.

4. a) What is M-ary signaling? Discuss its advantages and disadvantages over binary signaling.
b) What is an optimum receiver? With necessary mathematics explain the characteristics of a matched filter.

5. a) State and explain the sampling process for band pass signals.
b) Explain the generation process of PWM with neat block diagrams.

6. a) Write the short notes on correlation receiver.
b) Explain about matched filter receiver.

7. a) Consider a signal $x(t) = 5\cos(2000\pi t) + 10\cos(6000\pi t)$
i) What is the Nyquist rate and Nyquist intervals?
ii) Assume that, if we sample the signal using sampling frequency $f_s = 5000$ Hz, what is the resulting discrete time signal?
iii) Draw the spectrum of sampled signal when $f_s = 5000$ Hz.
b) What is pulse position modulation? How it is modulated and demodulated.

8. a) Explain how the PWM signal generated and demodulated.
b) Write short notes on
i) Entropy ii) Rate of information iii) Coding efficiency.

CODE No.:10BT70101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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 a ground control? Explain the methods of provision of control.
b) Determine the Flying height from outcrop which is 0.9m above the general ground level. Take focal length equal to 0.164 and photo scale factor is 1: 5000.

2. a) Describe the principle of RS with the help of neat sketch.
b) Explain the along track operation of scanner.

3. a) Explain the significance of Spectral Reflectance Curves.
b) Describe the characteristics of any two satellites.

4. a) Explain the fundamental operations of GIS with a simple example.
b) Describe Geographical entities, attributes, topology and cognitive models.

5. a) Define data structure. Explain in detail the types of data structures.
b) What is map projection? What is the map projection used in the preparation of Toposheets by SOI?

6. a) Describe vector overlay with examples. What is a metadata? Mention its role in GIS.
b) Explain the terms vector data storage and attribute data storage.

7. Describe the utility of Remote Sensing and GIS in Rainfall-Runoff modelling of a typical rural watershed.

8. Explain in detail how drainage morphometry is considered in watershed management.

CODE No.:10BT70103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

STEEL STRUCTURES - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Design main section of a riveted plate girder to carry a uniformly distributed load of 110kN/m over a span of 22m. Also design bearing and intermediate stiffener if necessary.

2. Design the section of a welded plate girder to carry a UDL of 60kN/m over a span of 15m. Show curtailment of flange plates and connection of the flange plates to the web.

3. a) State the different truss configurations that are often used in practice.
b) A single storey workshop building situated in a partially developed industrial area is 16m x 12m to be provided with a pitch roof. The C/C spacing of a truss is 4m. The sloping roof has a span of 12m and pitch ¼. The height of eaves is 5m above ground level. The building will be situated in Delhi, determine the wind pressure.

4. A tension member consists two angle sections and carries a load of 200 kN. Design the member when both the angles are connected.
i) on both sides of gusset plate ii) on the same side of the gusset plate.

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	=	180kN
Self weight of trolley, electric motor, hook etc.	=	35kN
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	=	300N/m
Diameter of crane wheels	=	150mm

6. A pressed steel tank is 6.25m x 6.25m x 2.5m supported on a staging 10 meters height. Pressed steel plates of size 1.25m x 1.25m are available consider wind pressure intensity of 1.5 kN/m².

7. a) What are the advantages of composite construction? Explain the different types of shear connectors.
b) Discuss the design of composite beam with shear connectors.

8. a) What are the advantages and disadvantages of plastic design?
b) Determine the collapse load of a fixed beam with a concesstrate load at mid span.

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CODE No.:10BT70111

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

GROUND IMPROVEMENT TECHNIQUES

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the need of ground improvement and explain how to select the type of ground improvement technique based on soil condition.
b) Explain about principles of ground improvement in cohesive and cohesionless soil.

2. a) Distinguish between the techniques of vibrofloatation and compaction piles.
b) Describe the deep compaction in granular soil with the factors influencing.

3. Explain any two methods of hydraulic modification of soil.

4. a) What are various types of admixtures commonly used to stabilize soils?
b) What are the benefits of cement stabilization?

5. a) Explain the mechanism involved in in-situ ground reinforcement.
b) Discuss the rock bolting and soil nailing methods.

6. What are the advantages of earth reinforcement and give the applications of reinforcing earth material.

7. a) What are the problems associated with expansive soils?
b) Explain any two tests to identify the expansive soils.

8. a) Illustrate the problems associated with expansive soils and how expansive soils are identified.
b) Discuss the improvement of expansive soils.

CODE No.:10BT70203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

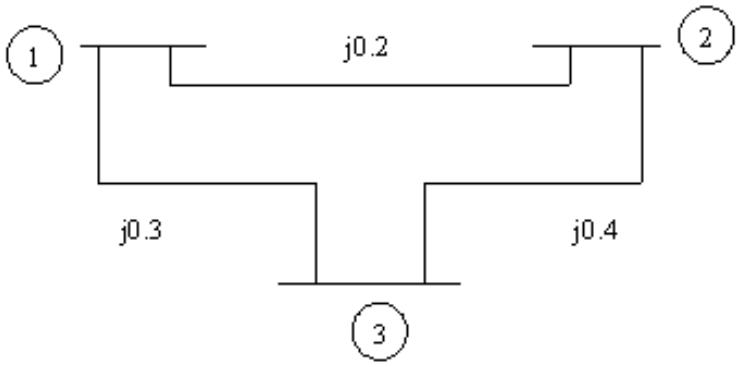
POWER SYSTEM ANALYSIS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Represent the power system network component in:
i) Impedance form ii) Admittance form.
b) Form YBUS by Direct Inspection method for the given power system shown in figure with reactance value in p.u. Select arbitrary directions.



2. Describe the algorithm for formation of bus impedance matrix for addition of a branch and for addition of a link.

3. Describe fast decoupled load flow method and give algorithm steps of it.

4. Explain with a flow chart, the computational procedure for load flow solution using fast decoupled method deriving necessary equations.

5. Write the performance equation of a three-phase network element in impedance form and in admittance form.

6. a) Define the terms: 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. a) What are the assumptions made in deriving swing equation?
b) Explain the equal area criterion, critical clearing time and critical clearing angle.

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CODE No.:10BT70204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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 parallel paths.
b) What factors limits the loading capability?

2. a) Explain reactive power control in electrical transmission.
b) What are the benefits of FACTS Controllers?

3. a) Explain the Transformer connection for 12 Pulse operation of Voltage Source Converter.
b) Explain the Principle of SVC.

4. Write a 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. Discuss the steady state V-I characteristics of SVC and STATCOM and their dynamic performance.

7. a) Explain the basic concept of series capacitor compensation.
b) Explain how series compensation can be used for power oscillation damping.

8. Explain different modes of operation of TCSC.

CODE No.:10BT70303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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. a) Solve the ordinary differential equation

$$\frac{d^2y}{dx^2} + 10x^2 = 0 \quad for \quad 0 \le x \le 1$$

Subject to boundary conditions y (0) = y (1) = 0 using the Galerkin method with trail functions $N_0(x) = 0$; $N_1(x) = x(1 - x^2)$.

b) Consider a 2 bar-truss supported by a spring shown in Fig. 1. Both bars have E=210 GPa and A = 5.0 x 10^{-4} m^2. Bar one has a length of 10 m. The spring stiffness is k = 2 kN /m. Determine the horizontal and vertical displacements at the joint 1 and stresses in each bar.

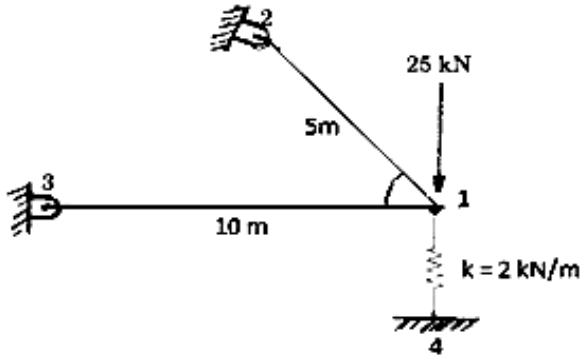

Fig. 1

3. Three span beam is loaded as shown in the Fig. 2. Determine the support reactions and deflection at the mid span. Take E = 2 x 10^{11} pa and I = 1.27 x 10^{-4} m^4.

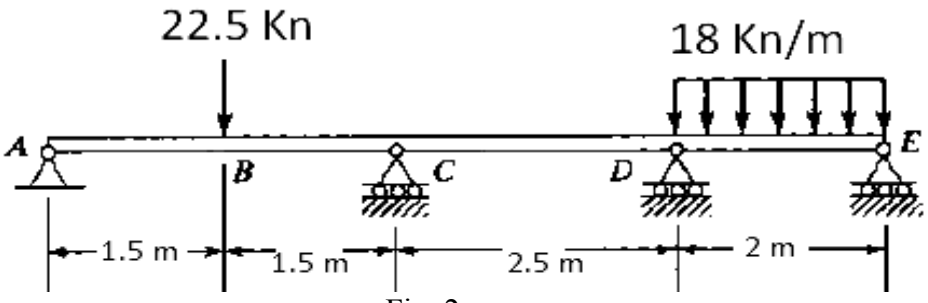

Fig. 2

4. Derive the strain displacement matrix for CST element and formulate the same for the element shown in the Fig. 3. Assume Poisson's ratio equal to zero and Young's modulus as constant.

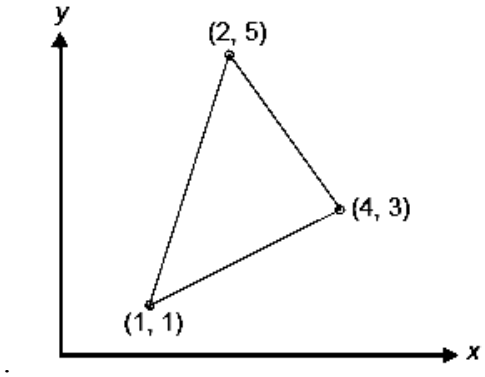

Fig. 3

5. Derive the stiffness matrix for a rectangular plane stress element.

6. A metallic fin which is 1mm thick and 600mm long extends from a plane wall whose temperature is 300 °C. Determine the temperature distribution from the fin to the air at 20 °C with h=9 w/m² °C. Take thermal conductivity of the fin, k=20w/m °C. Width of fin is 100mm. Use three element model.

7. For a smooth pipe of variable cross section shown in Fig. 4, determine the potentials at the junctions the velocities in each pipe and the volumetric flow rate. The potential at the left end is 10m and that at the right end is 2m. The permeability coefficient is 1m/s.

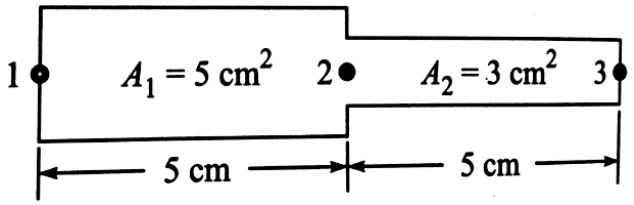

Fig. 4

8. Determine the eigen values of the stepped bar shown in Fig. 5. Take E = 200GPa, weight density 7850 kg/m³.

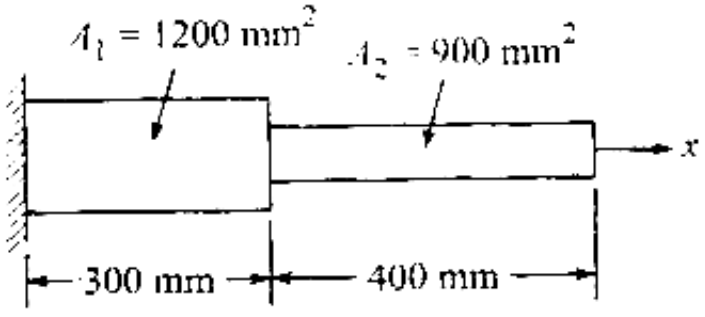

Fig. 5

CODE No.:10BT70304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

PRODUCTION AND OPERATIONS MANAGEMENT

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. State and explain the various factors significantly determine the process design.

2. a) Explain the need for forecasting. How do you select a forecast model?
b) Using the exponential smoothing technique, compute the forecasts from the following data (time series) under two situations when $\alpha = 0.3$ and $\alpha = 0.7$. Compute forecast for the 11^{th} period assuming initial forecast for the period 1 is 27. Which forecast do you accept? Give reasons.

Period	1	2	3	4	5	6	7	8	9	10
Demand	27	30	32	31	28	27	30	33	33	31

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. Write short notes on:
i) MRP ii) MRP-II iii) CRP iv) BOM

5. a) What are the different priority decision rules in scheduling? Explain any one of them.
b) Use graphical method to minimize the time needed to process the following jobs on machines A, B, C, D and E. Find the total time elapsed to complete both jobs. Also find for each job, the machine on which it should be processed first.

Job X	Sequence	C	D	E	B	A
	Time (Hours)	2	2	5	4	7
Job Y	Sequence	C	B	D	A	E
	Time (Hours)	4	5	3	4	4

6. The annual demand for an automobile component is 36,000 units. The carrying cost is Rs. 0.50/unit/year, the ordering cost is Rs. 25.00 per order and the shortage cost is Rs. 15.00/unit/year. Find the optimal values of the following:
i) Economic Ordering Quantity. ii) Maximum inventory.
iii) Maximum shortage quantity. iv) Inventory period.

7. a) Distinguish between supply chain and Keiretsu.
b) Explain the various aspects which are needed to build a supply chain.

8. a) Why does JIT manufacturing requires changes in manufacture architecture?
b) Write short notes on:
i) KANBAN system ii) Preventive maintenance.

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CODE No.:10BT70306

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

TOOL DESIGN

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

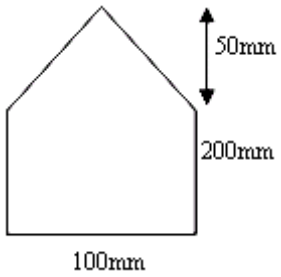
1. a) Explain merits, demerits and applications of ceramic tools.
b) What are the essential characteristics of materials to be used as coatings for cutting tools? Explain.

2. a) Explain various types of chips produced during metal cutting.
b) Show the merchant's force circle in orthogonal cutting and write the expressions for different force components.

3. Draw a neat sketch of milling cutter and explain its design features.

4. a) What are the differences between Jigs and Fixtures?
b) Explain briefly the following locating devices with a neat sketch:
i) Support pins and jack pins
ii) Conical locators

5. a) Differentiate between punching and blanking.
b) Determine centre of pressure for a given blank. The slant edges make 45^0 with the horizontal.



6. a) Explain the process of deep drawing.
b) What is the role of spring back in bending?

7. a) What factors do affect tool life? Explain.
b) During straight turning of a 24mm diameter steel bar at 300 r.p.m. with an HSS tool, a tool life of 9 min was obtained. When the same bar was turned at 250 r.p.m, the tool life increased to 48.5 min. What will be the tool life at a speed of 280 r.p.m.?

8. Explain
a) Applications of epoxy tools
b) Economics of tooling.

CODE No.:10BT70501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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) Explain the phases of a compiler.
b) Write a NFA for the regular expression: **(a | b)* ab**.

2. a) What is backtracking? Explain with an example.
b) Construct the predictive parsing table for the grammar
E →E+T/ T
T →T*F/F
F →(E)/id

3. a) Define 'Handle Pruning' in bottom-up parsing.
b) Consider the following grammar and construct the SLR parsing table.
E -> E +T | T
T -> TF | F
F ->F * | a | b

4. Write the syntax directed translation for Boolean expressions and trace with an example.

5. a) What is type checking? Explain the rules for type conversions in JAVA.
b) Distinguish between widening conversions and narrowing conversions.

6. a) What is an activation record and what are the contents of activation record?
b) What is heap storage allocation?

7. Explain about the principle sources of code optimization.

8. a) What are the various issues involved in code generation?
b) Discuss various strategies for register allocation for code generation.

CODE No.:10BT70502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

SOFTWARE TESTING TECHNIQUES

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss clearly about requirements, features and functionality bugs.
b) Write about different structural bugs.

2. Define path sensitization. Explain the heuristic procedure for Sensitizing paths with the help of an Example.

3. a) State and explain various transaction flow junctions and mergers.
b) Explain the terms inspections, reviews and walkthroughs.

4. Discuss in detail the nice domains and ugly domains with suitable examples.

5. Explain reduction procedure with an example.

6. a) Discuss about decision table and structures.
b) What are the rules of Boolean algebra?

7. State and explain Node-Reduction algorithm with suitable example.

8. a) What is the synchronization of test cases?
b) Explain Flow-Anomaly Detection.

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

WEB PROGRAMMING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain how would you create an Ordered List.
b) Discuss the advantages of CSS.

2. a) Mention various methods in Math object and String object.
b) Write a *JavaScript* to reverse a given string.

3. What is XML? Explain the XML validation process with DTD.

4. a) What is a *Java Servlet*? Explain its life cycle methods in-detail.
b) Write a Generic Servlet program to display the system date.

5. a) Explain the classes of **java.sql** package.
b) Explain the process of creating and executing SQL statements querying the database.

6. Design a JSP page with action elements for student registration form.

7. a) What are the different ways of inserting a bean property value in a JSP page?
b) What are JSP tag extensions?

8. What is Custom Tag library and how is it defined? Give an example.

CODE No.:10BT71203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

MULTIMEDIA AND APPLICATIONS DEVELOPMENT

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the components of multimedia? Explain any two Image editing tools.
b) Explain different types of image file formats.

2. a) Discuss SQNR and its significance.
b) Discuss the types of video signals.

3. Illustrate different types of constructor functions in Action Script 2.0.

4. a) What is an Interface? Write an Action Script program for implementing interface methods through a class.
b) Discuss about polymorphism concept in Action Script.

5. Explain OOPS action development using components of Action Script 2.0.

6. a) What is variable-length coding?
b) Explain Huffman coding and adaptive Huffman coding.

7. Discuss the following:
i) Vocoders.
ii) MPEG-1.

8. a) Explain Real Time Control Protocol.
b) Discuss the various broadcast schemes for Video-on-Demand.

CODE No.:10BT71208

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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. Describe the methods used in managing the development of large scale software Systems.

2. a) Compare and contrast change management environment and round trip engineering.
b) Explain the process of improving automation through software environments.

3. Describe the artifacts captured in the management set.

4. Explain an organized and abstracted view of the architecture into the design models.

5. Write about results of major milestones in a modern process.

6. a) Explain about the prototyping environment.
b) Explain default project organization and responsibilities.

7. a) Define Software metrics. Explain purpose and perspectives of seven core software metrics.
b) With all the basic parameters, describe Financial Performance measurement through an earned value approach.

8. Write short notes on the following
a) Modern project profiles next generation software economics.
b) CCPDS-R.

CODE No.:10BT71222

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2017

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. Write short note on:
i) Layered approach.
ii) Pipe-And-Filter approach.

3. How database is integrated? Explain interactive database architecture with a dataflow diagram.

4. Write short note on design space. Explain basic structural model for user interface software.

5. a) Describe the dynamic behavior of MVC.
b) Give the CRC card for top level, bottom level and intermediate level for PAC agent.

6. Write short notes on:
i) Architectural styles.
ii) Architectural design space.

7. What is ADL? How to capture architectural information in ADL? Explain with example.

8. a) What is component based system?
b) Discuss the architecture in figure legacy system.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

COMPUTER GRAPHICS

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Illustrate the working principle of CRT with neat diagram and analyze its importance in computer graphics.	7 Marks
	b)	Analyze the Boundary fill algorithm for a circular object with an example.	7 Marks
		(OR)	
2	a)	Consider the mid-point circle with radius r = 10, rasterizing the circle using Bresenhams algorithm.	7 Marks
	b)	Differentiate between shadow mask method and beam penetration methods.	7 Marks

UNIT-II

3	a)	Derive a transformation matrix to rotate an object with respect to a fixed point.	7 Marks
	b)	Discuss in detail transformations between coordinate systems.	7 Marks
		(OR)	
4	a)	Explain in detail viewing pipeline.	7 Marks
	b)	Illustrate Cohen-Sutherland line clipping process with suitable example.	7 Marks

UNIT-III

5	a)	Analyze the properties of Quadric surfaces.	7 Marks
	b)	Write about in detail about Spline representations.	7 Marks
		(OR)	
6	a)	Illustrate in how many ways Bezier surfaces could be represented, explain them.	7 Marks
	b)	Exemplify how the periodic B-Spline curves different from non-periodic B-Spline curves.	7 Marks

UNIT-IV

7	a)	Discuss in detail basic 3D transformations.	7 Marks
	b)	Differentiate parallel projection and perspective projection.	7 Marks
		(OR)	
8	a)	What is a composite transformation? Explain with an example.	7 Marks
	b)	Write short notes on viewing pipeline in 3D.	7 Marks

UNIT-V

9	a)	Discuss about back-face detection and depth-buffer.	7 Marks
	b)	Describe the BSP-tree methods.	7 Marks
		(OR)	
10		What are the various shading methods? Explain.	14 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

COMPUTER NETWORKS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the types of services offered by the layers? Explain in detail.	6 Marks
	b)	Compare circuit switched and packet switched networks.	8 Marks
		(OR)	
2	a)	List out the different media used for data transmission over the network.	8 Marks
	b)	Write about 802.11 data frame structure.	6 Marks

UNIT-II

3	a)	Explain the design issues of data link layer.	7 Marks
	b)	Explain about sliding window protocol.	7 Marks
		(OR)	
4	a)	Explain about GO back - N protocol.	7 Marks
	b)	Describe the basic concept of CSMA.	7 Marks

UNIT-III

5	a)	Mention any three special cases of IP addresses and their roles in networking.	8 Marks
	b)	List the fields of an IPv4 datagram header that participate in fragmentation and reassembly.	6 Marks
		(OR)	
6	a)	Define routing. Explain about various routing algorithms.	8 Marks
	b)	Explain different approaches are available for congestion control.	6 Marks

UNIT-IV

7	a)	Describe about the services provided by the transport layer to the network layer.	6 Marks
	b)	Define RPC. Explain the mechanism of RPC and RTCP in detail.	8 Marks
		(OR)	
8	a)	Explain the purpose of TCP and UDP in detail.	6 Marks
	b)	List out the methods used to avoid congestion in transport layer.	8 Marks

UNIT-V

9		Write a short notes on following: i) HTTP. ii) Web documents.	14 Marks
		(OR)	
10		Write a short note on cryptography. Explain with an example.	14 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

COMPUTER NETWORKS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the types of services offered by the layers? Explain in detail.	6 Marks
	b)	Compare circuit switched and packet switched networks.	8 Marks
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	b)	Explain about sliding window protocol.	7 Marks
		(OR)	
4	a)	Explain about GO back - N protocol.	7 Marks
	b)	Describe the basic concept of CSMA.	7 Marks

UNIT-III

5	a)	Describe the design issues of network layer.	7 Marks
	b)	Write a short note on Hierarchical routing.	7 Marks
		(OR)	
6	a)	What is count to infinity problem? Explain in detail.	7 Marks
	b)	Explain the leaky bucket and token bucket algorithm.	7 Marks

UNIT-IV

7	a)	List and describe transport service primitives.	5 Marks
	b)	Illustrate UDP with relevant examples.	9 Marks
		(OR)	
8	a)	Analyze and explain TCP connection establishment and TCP connection release.	7 Marks
	b)	Describe TCP congestion control and the future of TCP.	7 Marks

UNIT-V

9	a)	Give the architectural overview of World Wide Web, HTTP and HTML.	8 Marks
	b)	Write Short notes on: i) SMTP. ii) Five new message headers defined by MIME.	6 Marks
		(OR)	
10	a)	Define Message Digest. Describe about digital signature with an example.	8 Marks
	b)	Briefly explain about IP security and email security.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

OPERATING SYSTEMS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is a system call? Write about the purpose of a system call.	7 Marks
	b)	Explain in detail about the dual mode operation of OS.	7 Marks
		(OR)	
2	a)	Distinguish between thread and process.	6 Marks
	b)	What are long-term, short-term and medium-term schedulers?	8 Marks

UNIT-II

3	a)	What is starvation problem? Suggest a solution for it.	6 Marks
	b)	Explain how to use semaphores for process synchronization.	8 Marks
		(OR)	
4	a)	By means of an example, describe the role of Resource-Allocation and Wait-for graphs in deadlock detection.	6 Marks
	b)	Explain in detail about deadlock avoidance techniques.	8 Marks

UNIT-III

5	a)	Compare the segmented paging scheme with the hashed page tables scheme for handling large address spaces. Under what circumstances is one scheme preferable to the other?	7 Marks
	b)	Explain why sharing a reentrant module is easier when segmentation, is used than when pure paging is used.	7 Marks
		(OR)	
6	a)	Is it possible for a process to have two working sets, one representing data and another representing code? Explain.	7 Marks
	b)	Discuss situations under which the least frequently used page replacement algorithm generates fewer page faults than the least recently used page-replacement algorithm. Also discuss under what circumstance the opposite holds.	7 Marks

UNIT-IV

7	a)	List and describe the file attributes.	4 Marks
	b)	Discuss in detail about various file allocation methods.	10 Marks
		(OR)	
8		Explain about the disk scheduling algorithms with examples	14 Marks

UNIT-V

9	a)	Write a short note on: i) Polling. ii) Interrupts.	7 Marks
	b)	Explicate direct memory access.	7 Marks
		(OR)	
10		Illustrate with an example about implementation of access matrix.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

ADVANCED CONTROL SYSTEMS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Design a lead compensator for the unity feedback control system whose open loop transfer function $G(s) = \frac{K}{s(s+2)}$ such that, the dominant closed loop poles provide a damping ratio ζ=0.5 and have an undamped natural frequency of oscillations 4 rad/sec. 9 Marks

b) Explain tuning rules for PID controllers. 5 Marks

(OR)

2 Design a lag compensator to get the following specifications. 14 Marks
Damping ratio ζ=0.4, settling time t_{ss} = 10sec, Velocity error constant K_v=5Sec^{-1} for the system whose open loop transfer function is $G(s) = \frac{K}{s(s+1)(s+4)}$ with unity feedback using Bode plot.

UNIT-II

3 a) Explain the describing functions for non-linearities. 7 Marks

b) Explain the following describing function with diagrams. 7 Marks
i) Saturation non-linearity.
ii) Dead-zone non-linearity.

(OR)

4 a) Describe Delta method for constructing trajectories. 8 Marks

b) Explain the following with suitable examples. 6 Marks
i) Nodal point. ii) Saddle point. iii) Focus point.

UNIT-III

5 a) Explain the Variable-gradient method for constructing Lyapunov function. 9 Marks

b) State and explain Lyapunov instability theorem. 5 Marks

(OR)

6 Consider the following Non-linear system as shown in figure.1 below. Find the stability of the system using suitable method. The system is described by the state equations 14 Marks

$$\dot{x}_1 = -3x_2 - h(x_1)$$
$$\dot{x}_2 = -x_2 + h(x_1)$$

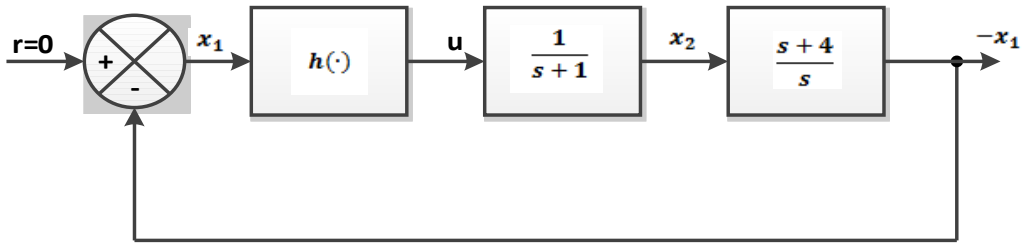

Fig.1. A nonlinear system

UNIT-IV

7 a) Explain the concept of state feedback in control systems. 6 Marks

b) Discuss the optimal regulator design by continuous time algebraic Riccatti equation. 8 Marks

(OR)

8 Consider a system defined by $\dot{X} = AX + BU; Y = CX$ where 14 Marks

$$A = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 1 & 1 \\ -5 & -2 & 0 \end{bmatrix}; B = \begin{bmatrix} 0 \\ 1 \\ 1 \end{bmatrix}; C = \begin{bmatrix} 1 & 0 & 0 \end{bmatrix}.$$

Design a full-order state observer, assuming that the desired poles for the observer are located at $s = \pm 10$ and $s = -2$.

UNIT-V

9 Find the variation of the functional $J(x) = \frac{1}{2}\int_0^1 (x^2(t) + 2x(t))dt$ where x be a continuous scalar function defined for $t_f(0,1)$. 14 Marks

(OR)

10 a) Find the curve with minimum arc length between the point $x(0) = 1.5$ and the line $t_1=3$. 7 Marks

b) Find the extremal for the functional which satisfies the boundary conditions $x(0) = 0, x\left(\frac{\pi}{2}\right) = 1$. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

DIGITAL SIGNAL PROCESSING

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Consider the system described by the difference equation $y(n) - y(n-1) + 0.25y(n-2) = x(n) - 0.25x(n-1)$. Find the response of the system to $x(n) = \left(\frac{1}{4}\right)^n u(n)$. 7 Marks

b) If the DTFT of $x(n) = \left(\frac{1}{5}\right)^n u(n+2)$ is $X(e^{jw})$, Find the sequence that has a DTFT given by $Y(e^{jw}) = X(e^{j2w})$. 7 Marks

(OR)

2 a) Use the z-transform to perform the convolution of the following two sequences: $h(n) = \begin{cases} \left(\frac{1}{2}\right)^n & 0 \le n \le 2 \\ 0 & elsewhere \end{cases}$ and $x(n) = \delta(n) + \delta(n-1) + \delta(n-2)$. 7 Marks

b) Find the inverse DTFT of $X(e^{jw}) = \cos 2w + j \sin w$. 7 Marks

UNIT-II

3 a) Compute the DFT for the given sequence x(n) = {2, 2, 4, 4, 3, 3, 1, 1} using Radix-2 DIF FFT algorithm. 7 Marks

b) Using the DFT and IDFT approach determine the response of FIR filter with impulse response $h(n)$ = {1,2,3} to the input sequence $x(n)$ = {1,-1,-2,3,-1}. 7 Marks

(OR)

4 a) Find the inverse DFT of $Y(k) = |X(k)|^2$ where $X(k)$ is the 10 point DFT of the sequence $x(n) = u(n) - u(n-6)$. 7 Marks

b) Develop an 8 point radix 2 FFT algorithm based on DIF technique. 7 Marks

UNIT-III

5 a) Obtain the direct form I, II, parallel and cascade form realization for the system **$y(n) = -0.1y(n-1) + 0.2y(n-2) + 3x(n) + 3.6x(n-1) + 0.6x(n-2)$.** 7 Marks

b) What is frequency warping? How it can be eliminated in the design of IIR filters using Bi-linear transformation? 7 Marks

(OR)

6 a) Discuss about different methods of realization of IIR systems. 7 Marks

b) Design IIR digital Butterworth low pass filter to satisfy the constraints 7 Marks

$0.707 \le |H(\omega)| \le 1$; for $0 \le \omega \le 0.2\pi$
$|H(\omega)| \le 0.1$; for $0.5\pi \le \omega \le \pi$

Use Impulse invariant transformation with T=1sec.

UNIT-IV

7 a) Explain the design of linear phase FIR filters by Fourier series method. 6 Marks

b) Design a linear FIR filter using Bartlett window for the desired frequency response $H_d(e^{jw}) = \begin{cases} e^{-j5w} & \frac{3\pi}{4} \le |w| \le \pi \\ 0 & otherwise \end{cases}$. 8 Marks

(OR)

8 a) Explain the principle of designing FIR filters using windows. 6 Marks

b) Obtain the cascade and parallel form of realizations for the system function $H(z) = \left(1 - \frac{1}{2}z^{-1} + z^{-2}\right)\left(1 - \frac{1}{4}z^{-1} + z^{-2}\right)$. 8 Marks

UNIT-V

9 a) Explain the various addressing modes used in P-DSPs. 7 Marks

b) Explain the internal and external memory organization in C6X. 7 Marks

(OR)

10 a) Explain what is meant by instruction pipelining. Explain with an example, how pipelining increases the throughput efficiency. 7 Marks

b) Describe the peripheral used in C6X processor with a block diagram. 7 Marks

CODE No.:14BT60431 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

PRINCIPLES OF COMMUNICATION

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Find Fourier transform of a burst of N cycles of a sine wave of period T_0 seconds. A burst of sine wave can be modeled as an infinite duration signal multiplied by a rectangular window, and then employ the convolution property of the Fourier transform for the product of two signals. Sketch the spectrum of the signal. 8 Marks

b) Find the Fourier Transform of the following: 6 Marks
i) Impulse function. ii) Unit step function.

(OR)

2 a) Discuss about the relationship between Fourier series and Fourier transform. 6 Marks

b) State and prove following properties of a Fourier transform. 8 Marks
i) Symmetry property. ii) Scaling property.
iii) Time-shifting property.

UNIT-II

3 a) Explain the concept of frequency translation using the spectrum of DSB-SC wave. 6 Marks

b) In an AM-SC system, modulating signal is a single tone sinusoidal signal $\mathbf{4\cos 2\pi 10^3}$, which modulates carrier signal $\mathbf{6\cos 2\pi 10^6 t}$. Write the equation of the modulated wave. Plot the two sided spectrum of the modulated wave. Calculate the amount of power transmitted. 8 Marks

(OR)

4 a) An angle modulated signal has the forum $v(t) = 100\cos[2\pi f_c t + 4 \sin 2000\pi t]$ where $f_c = 5$MHz. 8 Marks
i) Determine the average transmitted power.
ii) Determine the peak phase deviation.
iii) Determine the peak frequency deviation.
iv) Is this FM or a PM signal? Explain.

b) Explain the detection of FM wave using balanced frequency discrimination. 6 Marks

UNIT-III

5 a) State and prove sampling theorem with necessary diagrams. 8 Marks

b) Differentiate PPM and PWM. 6 Marks

(OR)

6 a) Explain the demodulation of PAM signals. 8 Marks

b) Compare TDM and FDM. 6 Marks

UNIT-IV

7 a) Explain how integrator is used to detect the baseband signal. Obtain an expression for S/N of integrator and dump receiver. 7 Marks

	b)	Derive the probability error of QPSK system and explain its operation.	7 Marks
		(OR)	
8	a)	Derive the probability of error for FSK.	7 Marks
	b)	Obtain the probability of error for Matched filter.	7 Marks

UNIT-V

9	a)	A discrete source transmits six messages symbols with probabilities of 0.3, 0.2, 0.2, 0.15, 0.1, 0.05. Device suitable Fano and Huffmann codes for the messages and determine the average length and efficiency of each code.	8 Marks
	b)	Write short notes on Linear Bloc codes.	6 Marks
		(OR)	
10	a)	Draw the generalized encoder diagram for convolutional codes	6 Marks
	b)	A rate 1/3 convolution code is described by g_1 = [1 1 1], g_2 = [1 0 0], g_3 = [1 0 1]. Draw the encoder and code tree corresponding to this code. What is constraint length of convolution code?	8 Marks

CODE No.:14BT70101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

STEEL STRUCTURES

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain briefly various types of loads to be considered in design of steel structures. 14 Marks

(OR)

2 Explain the principles of: 14 Marks
i) Working stress method of design.
ii) Limit state method of design.

UNIT-II

3 A bracket of 10mm thick is bolted to the flange of ISHB300@577N/m. The eccentric factored load is 250kN and the eccentricity is 300mm. Using M16 bolts of grade 4.6, design the connection. 14 Marks

(OR)

4 Find the efficiency of the lap joint if six number of M20 bolts of grade 4.6 in 2 rows are used to connect two plates each 180mmx20mm. Pitch distance = 60mm, Edge distance = 30mm. 14 Marks

UNIT-III

5 Design a single angle to carry a tension of 150kN. The end connection is to be done using M20 bolts of product grade C and property class 4.6. The yield and ultimate strengths of the steel are 250MPa and 410MPa, respectively. 14 Marks

(OR)

6 Design a single angle discontinuous strut to carry a factored axial compressive load of 65 kN. The length of strut is 3.0m between intersections. It is connected to 12mm thick gusset plate by 20mm diameter 4.6 grade bolts. Use steel of grade Fe 410. 14 Marks

UNIT-IV

7 A hall measuring 15m x 6m consists of beams spaced at 3mc/c R.C.C. slab of 120mm is cast over the beam. The imposed load is 4kN/m^2.The beam is supported on 300mm wall. Design one intermediate beam and check the design for deflection, web buckling, web crippling. 14 Marks

(OR)

8 Design a compression member of two channels placed back-to-back. The length of the compression member is 8m and carries a load of 1000kN. The width over the backs of channels is 450mm. The channels are connected by battens. Sketch the c/s of the column. 14 Marks

UNIT-V

9 A column section ISHB 450@661.2 N/m carries an axial compressive factored load of 1800KN. 14 Marks

Design a suitable welded gusset base .The base rests on M15 grade of concrete.

(OR)

10 A column section ISHB 450@907.4 N/m is subjected to following factored loads. 14 Marks

Axial compressive load P = 550KN.

Moment M =120KNm

Assuming M30 grade of concrete for pedestal and a square base plate, design the following.

i) Thickness of base plate. Assume Fe410 grade of steel:
f_u=410Mpa; f_y=250Mpa.

ii) Anchor bolts.

iii) Welds.

CODE No.:14BT70102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

WATER RESOURCES ENGINEERING

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly explain various types of irrigation.	7 Marks
	b)	Explain various methods for improving soil fertility.	7 Marks
		(OR)	
2	a)	Define consumptive use and explain various methods for the determination of consumptive use.	7 Marks
	b)	Calculate the discharge required at the outlet when area to be irrigated in rabi is 3800 hectares and kharif is 16000 hectares, kor depth and kor period for rabi and kharif are 13.5cm and 4.5 weeks and 19cm and 3 weeks respectively.	7 Marks

UNIT-II

3	a)	What are the main causes of failure of weir on permeable foundations and what remedies would you suggest to prevent them?	7 Marks
	b)	Explain Bligh's creep theory for seepage of flow below a weir.	7 Marks
		(OR)	
4		Draw a neat sketch showing various components of canal head works. Briefly explain the functions of each component.	14 Marks

UNIT-III

5	a)	Discuss the geological and topographical features which affect the selection of type of dam.	7 Marks
	b)	What is flood routing? Write a short note on methods of flood routing.	7 Marks
		(OR)	
6	a)	Discuss the physical factors governing the selection of a particular type of a dam.	7 Marks
	b)	Describe the zoning of storage of a reservoir.	7 Marks

UNIT-IV

7	a)	What is an earth dam? Give its classification.	7 Marks
	b)	Explain Kennedy's theory and design an irrigation channel to carry 50 cumec of discharge. The channel laid to be at a slope of 1 in 4000. The critical velocity ration for the soil is 1.2. Use Kutters rugosity coefficient as 0.023.	7 Marks
		(OR)	
8	a)	What are the different methods to reduce seepage in earth dams?	7 Marks
	b)	Describe three classes of outlets, their relative merits and demerits.	7 Marks

UNIT-V

9	a)	Describe various steps for the design of a siphon-aqueduct and how it will benefit the society.	7 Marks
	b)	What are the different types of cross drainage works? Explain them in brief.	7 Marks
		(OR)	
10		Discuss various types of cross drainage works used in canal systems. What	14 Marks

considerations govern the selection of the different types of works mainly depending upon the levels of the canal and the drainage? Illustrate by drawing a neat sketch of each type of structure.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

GEOSPATIAL TECHNOLOGIES

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the following: i) Floating marks. ii) Fiducial marks. iii) Mosaic.	9 Marks
	b)	Determine the flying height above a terrain, if the focal length is 37.5cm and the scale of the photograph is 1:10000.	5 Marks
		(OR)	
2		Explain how the ground coordinates and its distance can be obtained from a vertical photograph.	14 Marks

UNIT-II

3	a)	Discuss electromagnetic energy and electromagnetic spectrum.	7 Marks
	b)	Compare the spectral reflectance characteristics of water and soil.	7 Marks
		(OR)	
4	a)	What are the various elements of remote sensing?	8 Marks
	b)	Explain the importance of atmospheric windows.	6 Marks

UNIT-III

5		What is a map projection system? Explain any one map projection system in detail.	14 Marks
		(OR)	
6		Define GIS. Describe briefly raster and vector data structures.	14 Marks

UNIT-IV

7		Describe with neat sketch the types of vector overlays.	14 Marks
		(OR)	
8		What do you understand by GPS? Give an overview of GPS.	14 Marks

UNIT-V

9	a)	What is drainage morphometry? Explain.	7 Marks
	b)	Discuss in detail about the water resources management and monitoring.	7 Marks
		(OR)	
10	a)	Discuss about the land use and land cover in water resources.	7 Marks
	b)	What are the different factors which affects run-off? Explain any four.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

RURAL TECHNOLOGY

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Explain the role of science and technology in rural development.	14 Marks
	(OR)	
2	Explain role of CAPART and NABARD in rural development.	14 Marks

UNIT-II

3	Write a note on recycling, management and waste conservation.	14 Marks
	(OR)	
4	What are the different types of alternate energies used in rural areas?	14 Marks

UNIT-III

5	Explain the role of food and agro based technologies in rural development.	14 Marks
	(OR)	
6	Detail the role of cottage and social industries in rural development.	14 Marks

UNIT-IV

7	Explain use of rain water harvesting in water conservation.	14 Marks
	(OR)	
8	State the importance and uses of Bio-fertilizers.	14 Marks

UNIT-V

9	Explain the need and necessity of technology in rural development.	14 Marks
	(OR)	
10	What is meant by CSR? State role of private sector in rural development.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

ADVANCED FOUNDATION ENGINEERING

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) How would you determine the contact pressure for a footing subjected to loads placed eccentrically placed? 6 Marks

b) Compute the ultimate load that an eccentrically loaded square footing of width 2.10m with an eccentricity of 0.35m can take at a depth of 0.5m in a soil with γ =18 kN/m^3, c = 9 kN/m^2, Φ = 36^0, N_c = 52, N_q = 35 and N_γ = 42. 8 Marks

(OR)

2 a) A circular raft foundation of 20m diameter and 1.6m thick is provided for a tank that applies a bearing pressure of 110 kPa on sandy soil with Young's modulus, E_s' = 30MPa and Poisson's ratio, ν_s = 0.3. The raft is made of concrete (E_c = 30GPa and ν_c = 0.15). Considering the raft as rigid, find the elastic settlement (in mm). 8 Marks

b) Describe the major differences between SPT, SCPT and DCPT. 6 Marks

UNIT-II

3 a) In a soft clay the skin friction that develops between the soil and the pile is always equal to the undrained strength of clay, but in stiff clay it is much less than the undrained strength of stiff clay. Explain. 6 Marks

b) A 450mm wide, square concrete pile 15m long is driven in a deep deposit of uniform clay. Laboratory unconfined compression tests on undisturbed samples indicate an average $\mathbf{q_u}$ value of 75kN/m^2. Calculate the ultimate load capacity of the pile. Assume necessary data. 8 Marks

(OR)

4 a) A group of 9 piles arranged in square pattern with equal pile spacing of 914mm. The piles are circular in cross section and have outside diameter of 457mm. Find the efficiency of pile group. 8 Marks

b) A pile not resting on rock derives 60% of its ultimate axial capacity from skin friction and balance 40% from the end bearing. If a safe load of 33% of the ultimate capacity is applied to the pile, will it be resisted by skin friction or end bearing? Discuss why. 6 Marks

UNIT-III

5 a) What is a sheet pile wall? Classify various types of sheet pile walls. 7 Marks

b) Sketch a typical section of a braced cut and show the various components. 7 Marks

(OR)

6 Determine the depth of embedment for an anchored sheet pile wall penetrating granular soil and supporting a backfill of the same material to a height of 8m. Tie rods are placed at a depth of 2.5m below the top γ = 16kN/m^3 and φ = 35°. Assume fixed earth support. Determine also the tie rod tension. 14 Marks

UNIT-IV

7	a)	"The swelling soils of India are called by the name Black Cotton Soils". What is the reason for these soils to be called as black cotton soils? i) Due to what reasons black cotton soils are considered as expansive soils. ii) State the parts of regions covered by black cotton soils in India.	7 Marks
	b)	Write a note on identification tests of expansive soils.	7 Marks

(OR)

8	a)	Write a note on IS method of determination of swelling pressure.	7 Marks
	b)	Based on the swelling pressure of different clays, how do you judge the expansive nature of these clay soils?	7 Marks

UNIT-V

9	Describe about any two shore protection structures with neat sketches.	14 Marks

(OR)

10	Design a piled wharf structure for the following data:	14 Marks

Weight of the ship	= 1500000kN
Number of piles in a bent	= 15
Number of bents sharing impact	= 16
Velocity of ship	= 10 mm/sec
Permissible value of deflection	= 4 mm.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Recognize the analytical functions associated with EIA.	7 Marks
	b)	Enlist the typical impacts of a development project like construction of a dam.	7 Marks
		(OR)	
2	a)	Identify the major categories of environmental impacts.	7 Marks
	b)	Explain the importance of impact prediction and assessment.	7 Marks

UNIT-II

3	a)	Discuss the criteria to be considered for selection of EIA methodology.	7 Marks
	b)	State briefly about the Oregon Scaling Check test method.	7 Marks
		(OR)	
4	a)	Explain briefly the environmental medium quality index method.	7 Marks
	b)	Describe the procedure of overlay methods. List any two merits and demerits.	7 Marks

UNIT-III

5	a)	Explain the methodology for the assessment of surface water.	7 Marks
	b)	What are the measures taken to prevent soil pollution?	7 Marks
		(OR)	
6	a)	What are the mitigation measures to be taken for reducing the impact on surface water quality by the use of agricultural chemicals?	7 Marks
	b)	Explain impacts on surface water environment.	7 Marks

UNIT-IV

7	a)	What are the causes and effects of Deforestation?	7 Marks
	b)	Explain the environmental impact of Deforestation.	7 Marks
		(OR)	
8	a)	Explain the sources of Air pollution.	7 Marks
	b)	Explain the impact of developmental activities on vegetation.	7 Marks

UNIT-V

9	a)	What is meant by environmental audit? What are the different objectives of it? Explain.	7 Marks
	b)	Describe the process of audit protocol.	7 Marks
		(OR)	
10	a)	Write a short note environmental legislation.	7 Marks
	b)	Write short note post audit activities.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

POWER SEMICONDUCTOR DRIVES

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State the advantages of electric drives over other drives.	7 Marks
	b)	List and explain various components of load torques.	7 Marks
		(OR)	
2	a)	Explain multi quadrant operation of electric drive.	7 Marks
	b)	Discuss closed loop speed control of electric drive with suitable block diagram.	7 Marks

UNIT-II

3	a)	Explain the operation of a separately excited **dc** motor supplied from 1-Φ fully controlled rectifier. Assume continuous conduction.	7 Marks
	b)	Explain the operation of dual converter controlling the separately excited **dc** motor.	7 Marks
		(OR)	
4	a)	Explain the operation of a separately excited **dc** motor supplied from 3-Φ fully controlled rectifier with necessary diagrams. Assume continuous conduction.	7 Marks
	b)	A 200V, 875r.p.m, 150A separately excited **dc** motor has an armature resistance of 0.06Ω. It is fed from a three phase fully controlled rectifier with an ac source of 220V, 50Hz. Assuming continuous conduction, calculate: i) Firing angle for rated motor torque and 750 r.p.m. ii) Motor speed for $\alpha = 160^0$ and rated torque.	7 Marks

UNIT-III

5		Explain closed loop control scheme for speed control of dc separately excited motor.	14 Marks
		(OR)	
6	a)	Explain the speed control of **dc** series motor fed from two quadrant choppers. Draw the motoring and regenerative braking characteristics.	7 Marks
	b)	A 220 V, 24 A, 1000 r.p.m **dc** separately excited motor has an armature resistance of 2Ω. Motor is controlled by a basic chopper with frequency of 500Hz and source voltage of 230V. Calculate the duty ratio for 1.2 times rated torque and 500 r.p.m.	7 Marks

UNIT-IV

7	a)	Why stator voltage control is suitable for speed control of induction motors in fan and pump drives.	7 Marks
	b)	With necessary block diagram, explain operation of variable frequency control of 3-Φ induction motor.	7 Marks
		(OR)	

8 A 400V star connected, 3-Φ, 6-pole, 50Hz induction motor has following parameters referred to the stator: Rs = Rr' = 1Ω, Xs =Xr'=2Ω. For regenerative braking operation of this motor determine: 14 Marks

i) Maximum overhauling torque it can hold and range of speed for safe operation.

ii) Speed at which it will hold an overhauling load with a torque of 100N-m

UNIT-V

9 a) Explain the operation of load commutated CSI fed synchronous motor drive. 7 Marks

b) What is the basic difference between true synchronous mode and self control mode for variable frequency control of synchronous motor? 7 Marks

(OR)

10 With the help of neat diagram, explain the operation and features of stepper motor with drive circuit. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

POWER SYSTEM OPERATION AND CONTROL

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Consider two steam power plants operating with incremental production costs 7 Marks

$dC_1(P_1)/dP_1 = 0.08P_1 + 16$ Rs/MWh

$dC_2(P_2)/dP_2 = 0.08P_2 + 12$ Rs/MWh

given the loss coefficients

$B_{11} = 0.001$ per MW

$B_{12} - B_{21} = -0.0005$ per MW

$B_{22} = 0.0024$ per MW

Find the economic schedule of generation for $\lambda = 20$ Rs/MWh.

b) Obtain the expressions for "Loss coefficients" by considering a suitable power system and explain the effect of loss coefficients on system performance. 7 Marks

(OR)

2 a) Obtain the economic allocation of generation among generators of a thermal system considering the transmission losses and discuss about penalty factor and incremental transmission losses with necessary equations. 7 Marks

b) A power system with two generation stations supplied a total load of 800MW. Neglecting transmission losses the economic schedule for the plant generation is 150MW and 250MW. Find the saving in the production cost in Rs/hr. due to this economic schedule as compared to equal distribution of the same load between the two units. 7 Marks

The incremental cost characteristics are:

$dC_1(P_1)/dP_1 = 0.3P_1 + 30.0$

$dC_2(P_2)/dP_2 = 0.4P_2 + 32.5$

UNIT-II

3 Explain the hydro-thermal economic scheduling problem. Derive the necessary equations. 14 Marks

(OR)

4 a) Is the hydro-thermal scheduling problem is a static or dynamic problem? Explain in detail. 7 Marks

b) Write the expression for a Lagrangian function obtained by augmenting the objective function with constraint equations in the case of a hydro-thermal scheduling problem. Define each term in the expression in detail. 7 Marks

UNIT-III

5 a) Explain, what is Priority List method. 7 Marks

b) What is "Unit Commitment" problem? Distinguish between Economic Dispatch and Unit Commitment problems. 7 Marks

(OR)

6 What are the various methods of Unit Commitment? Explain each of them with relevant equations. 14 Marks

UNIT-IV

7	a)	Explain with neat sketch and derive the transfer function for speed-governing system.	7 Marks
	b)	Explain the importance of keeping voltage and frequency constant in power system and justify with necessary equations.	7 Marks

(OR)

8	a)	Explain about Generator-Load model and derive its transfer function.	7 Marks
	b)	Explain about IEEE type-1 excitation system.	7 Marks

UNIT-V

9	a)	Explain about LFC of isolated power system. Derive the steady state frequency error.	8 Marks
	b)	Define the following terms: i) Tie line. ii) Coherent group. iii) Control area.	6 Marks

(OR)

10		Two interconnected Area-1 and Area-2 have the capacity of 2000MW and 500MW respectively. The incremental regulation and damping torque coefficients for each area on its own base are 0.2PU and 0.8PU respectively. Find the steady state change in system frequency from nominal frequency of 50Hz and the change in steady state tie line power following a 750MW change in load of area. Also solve the problem without governor control.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

POWER SYSTEM ANALYSIS

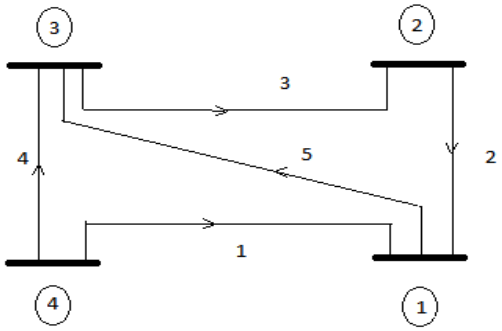
[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Develop all incidence matrices A, A^, B, B^, C and C^ for the network shown in figure. Consider bus 1 as reference. 14 Marks



(OR)

2 a) Deduce the equation to form Y_{BUS} using singular transformation method. 8 Marks
b) State and explain primitive network. 6 Marks

UNIT-II

3 Form Z_{BUS} by building algorithm for a power system network, whose data is given in the table below. 14 Marks

Bus Code	Self Impedance (p.u.)	Bus Code	Mutual Impedance (p.u.)
1-2	0.1		
2-3	0.6		
3-4	0.3		
4-1	0.7	3-4	0.1
2-4	0.2		

(OR)

4 a) What are the advantages of Z_{BUS} building algorithm? 7 Marks
b) Z_{BUS} matrix elements are given by $Z_{11} = 0.2$, $Z_{22} = 0.6$ and $Z_{12} = 0$. Find the modified Z_{BUS} if a branch having an impedance 0.4 p.u. is added from the reference bus (Bus - 1) to new bus. 7 Marks

UNIT-III

5 a) Explain the algorithm for Gauss Seidel load flow method. 10 Marks
b) Explain the significance of slack bus in load flow studies. What is the data needed for load flow studies? 4 Marks

(OR)

6 For the network shown in figure, obtain the complex bus voltage at bus 2 at the end of first iteration using GS method. Bus '1' is Slack bus with $V_1 = 1.0\angle 0^o$. $P_2 + jQ_2 = -5.96 + j1.46$, $|V_3|=1.02$ 14 Marks

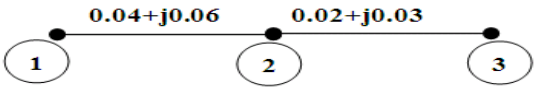


Fig.Q6

UNIT-IV

7 a) Derive the necessary equations for computing all the elements of the Jacobian matrix using NR polar coordinates method. 7 Marks

b) What are the assumptions made in reducing decoupled method to fast decoupled method of power flow solution? 7 Marks

(OR)

8 What are the assumptions made in forming **B'** and **B''** matrices for fast decoupled load flow solution? With the help of flow chart, explain the procedure of solving load flow equations by fast decoupled load flow algorithm by **1δ -1V** approach. 14 Marks

UNIT-V

9 a) Solve the equivalent inertia constant of two machines swinging coherently. 7 Marks

b) A 50Hz, 4 pole turbo generator rated 100MVA, 11kV has an inertia constant of 8 MJ/MVA. 7 Marks

i) Find the stored energy in the rotor at synchronous speed.

ii) If the mechanical input is suddenly raised to 80MW for an electrical load of 50MW, find the rotor acceleration, neglecting mechanical and electrical losses.

(OR)

10 a) Explain the different methods of improving stead state and transient stability. 7 Marks

b) Explain equal area criteria for investigating the stability of power system. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

FINITE ELEMENT METHODS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) If a displacement field is described by $\boldsymbol{u} = (-2x + 3y^2 + xy)10^{-4}$ and $(-x^2 + 5y - y^2)10^{-4}$. Determine εx, εy and γxy at the point $x = 2$, $y = 1$. 7 Marks

b) Derive the equations of equilibrium in case of a three dimensional stress system. 7 Marks

(OR)

2 A stepped bar is subjected to an axial load of 200kN at the place of change of cross section and material as shown in the figure 1. Find nodal displacements, reaction forces and stresses in each material. 14 Marks

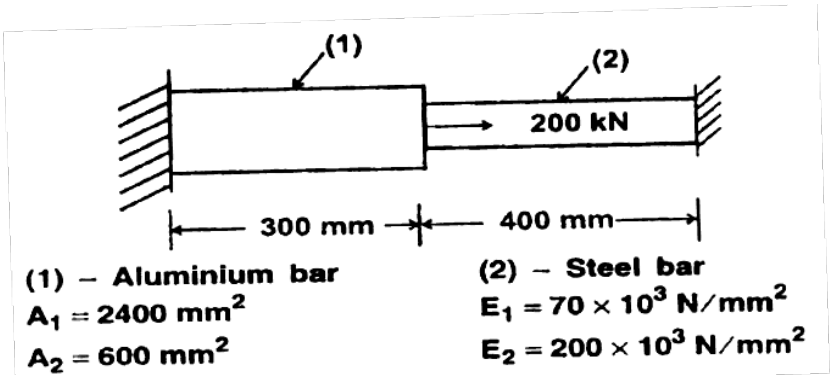

Figure 1.

UNIT-II

3 For the two-bar truss shown in figure 2, determine the displacements of node 1 and the stress in element connecting nodes 1 and 3. 14 Marks

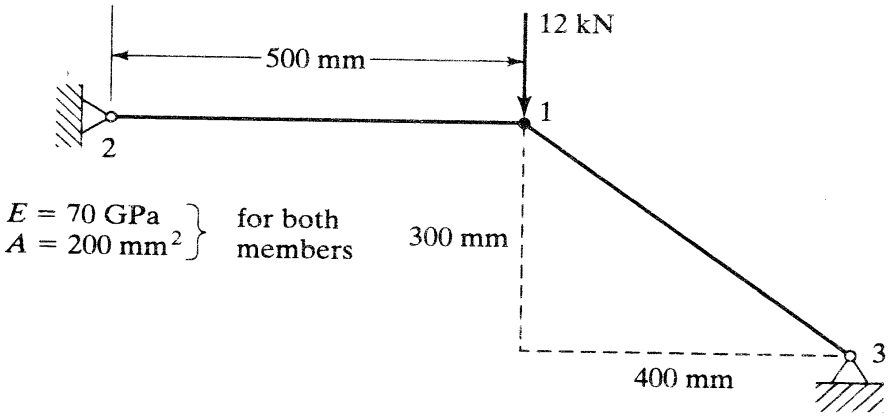

Figure 2.

(OR)

4 a) Plot Hermite shape functions of a beam element and discuss the end conditions. 7 Marks

b) Explain the procedure used to determine support reactions of beam in FEM. 7 Marks

UNIT-III

5 a) What is a constant strain triangular element? State its properties and applications. 7 Marks

b) The nodal coordinates of the triangular element are shown in figure 3. At the interior point P the x coordinate is 3.3 and the shape function at node 1 is N1 is 0.3. Determine the shape functions at nodes 2 and 3 and also the y coordinate of the point P. 7 Marks

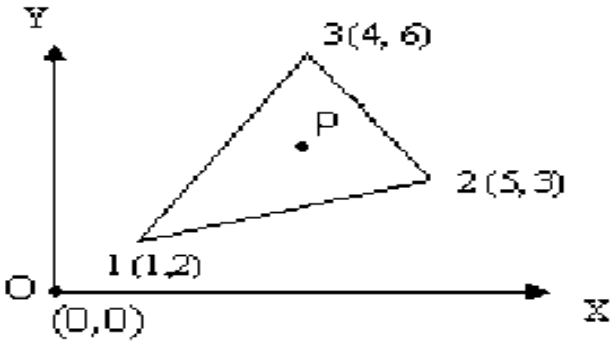

Figure 3.

(OR)

6 With suitable examples, explain the meaning and formulations of properties of axisymmetric elements. State their applications. 14 Marks

UNIT-IV

7 Consider a brick wall thickness 0.3m with the thermal conductivity of 0.7 W/mK. The inner surface is at 28^0C and the outer surface is exposed to cold air with the heat transfer coefficient of 40 W/m^2 K at -15^0C. Determine the steady state temperature distribution and also the heat flux through the wall. Use two elements and obtain the solution. 14 Marks

(OR)

8 Discuss the formulation of 4-noded iso parametric element and derive the stiffness matrix for it. 14 Marks

UNIT-V

9 a) Derive the element mass matrix for 2-D triangular element. 7 Marks

b) Derive the shape functions for 4-noded bar element using Lagrangian interpolation function. Nodes are equally spaced. 7 Marks

(OR)

10 Consider the axial vibration of the steel bar as shown in the figure 4.

i) Develop the global stiffness and mass matrices. 4 Marks

ii) Determine the lowest natural frequency and its mode shape. 10 Marks

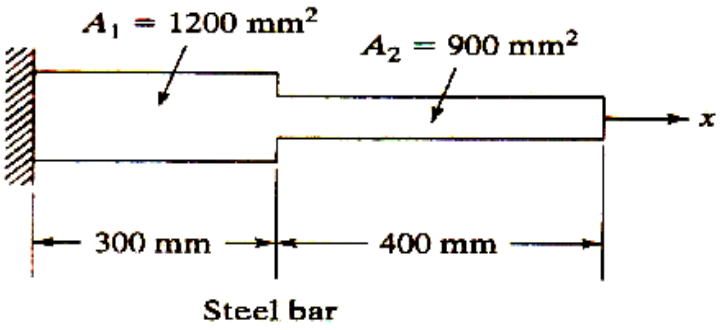

Figure 4.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

REFRIGERATION AND AIR CONDITIONING

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Compare air refrigeration systems with vapor compression systems. 6 Marks

b) A Bell Coleman refrigeration cycle works between 1 bar and 5 bar. The adiabatic efficiency of compressor is 85% and expander is 90%. Find out COP of the system and its tonnage when air flow rate is 2kg/s. The ambient temperature is 27^0C and the air coming out of refrigerator is 0^0C. 8 Marks

(OR)

2 a) Sketch and explain the working of Boot strap cooling system used in aircrafts. 10 Marks

b) Discuss the concepts of Heat engines, Refrigerators and Heat pumps. 4 Marks

UNIT-II

3 A vapour compression refrigerator works between the pressures 4.93 bar and 1.86 bar. The vapour is superheated at the end of compression, its temperature being 25^0C. The liquid is cooled to 9^0C before throttling. The vapour is 95% dry before compression. Using the data given below, calculate the coefficient of performance and refrigerating effect per kg of the working substance circulated. Take the specific heat at constant pressure for the superheated vapour is 0.645 kJ/kgK and for the sub-cooled liquid is 0.963 kJ/kgK. 14 Marks

Pressure, bar	Saturation temp., ^{0}C	Total heat (liquid), kJ/kg	Latent heat, kJ/kg
1.86	-15	21.67	161.41
4.93	14.45	49.07	147.80

(OR)

4 a) Explain the working of dry compression Vapour Compression Refrigeration System with the help of T-s and P-h diagrams. 7 Marks

b) Explain the physical, thermodynamic and chemical properties of a refrigerant. 7 Marks

UNIT-III

5 a) What are the desirable properties of a refrigerant-absorbent pair? 6 Marks

b) Sketch the layout of a steam jet refrigeration system and explain its working. 8 Marks

(OR)

6 What is the distinctiveness of a 3 fluid vapor absorption system? Explain the working of a commonly used 3 fluid VAR system with a neat sketch and discuss its limitations. 14 Marks

UNIT-IV

7 An air conditioned space is maintained at 26^0C DBT and 50% RH when the outdoor conditions are 35^0C DBT and 28^0C WBT. The space has a sensible heat gain of 17.6kW and the air to the space is supplied at a condition of 8^0C saturated. Determine 14 Marks

i) The mass and volume flow rate of the air supplied.
ii) Latent heat load in the room.
iii) Cooling load of the plant if 15% of total mass of air supplied to the space is fresh air and the remaining air is re circulated.

(OR)

8	a)	Sketch and explain year round air conditioning system.	6 Marks
	b)	Discuss about the different components of cooling loads in A/C systems.	8 Marks

UNIT-V

9	a)	What is effective temperature? How does it account for human comfort? What is comfort equation?	7 Marks
	b)	What is the function of a fan in an air conditioning system? Explain the various types of axial flow fans.	7 Marks

(OR)

10	a)	Compare the viscous impingement filter with the dry filter.	7 Marks
	b)	Write a short note on the air-washer type humidifier.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Classify the errors in measurement.	7 Marks
	b)	Differentiate between accuracy and precision.	7 Marks
		(OR)	
2	a)	How a calibration is done using potentiometer method for a **dc** Voltmeter?	7 Marks
	b)	Explain in detail about the Ramp type DVM.	7 Marks

UNIT-II

3	a)	Draw the circuit diagram of Sweep generator and explain its operation in detail.	7 Marks
	b)	Define a wave analyzer and classify them. Explain the working of a frequency selective wave analyzer.	7 Marks
		(OR)	
4	a)	Explain the operation of Harmonic Distortion analyzer.	6 Marks
	b)	Draw the block diagram; explain working of a spectrum analyzer.	8 Marks

UNIT-III

5	a)	Draw the block schematic of a sampling oscilloscope and explain its operation.	7 Marks
	b)	Demonstrate the basic principle of Triggered Sweep CRO.	7 Marks
		(OR)	
6	a)	Illustrate the concept of Dual Trace CRO.	7 Marks
	b)	Draw the block schematic of general purpose CRO and explain the principle of operation of CRT.	7 Marks

UNIT-IV

7	a)	Explain how capacitance is measured using Schering's bridge.	7 Marks
	b)	Explain about the strip chart recorder.	7 Marks
		(OR)	
8	a)	Identify the errors incurred while using the electrical bridges.	7 Marks
	b)	Identify the bridge and explain the working of it to measure the low resistance.	7 Marks

UNIT-V

9	a)	Derive the expression for Gauge factor of a strain Gauge.	8 Marks
	b)	Explain the operation of piezo electric transducers.	6 Marks
		(OR)	
10	a)	Explain about single channel data acquisition system.	6 Marks
	b)	Explain the working principle of an accelerometer.	8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

EMBEDDED SYSTEMS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is an embedded system? Explain three main characteristics of embedded systems that distinguish such systems from other computing systems.	6 Marks
	b)	Design a single purpose processor which finds the GCD of two given numbers. Draw the state diagram and sketch the probable data path.	8 Marks
		(OR)	
2	a)	The design of a disk drive has an NRE cost of 1,00,000/- and unit cost of 20/-. Calculate the per product cost, if we sell: i) 100 units. ii) 10,000 units.	4 Marks
	b)	Explain general purpose processor with the help of its basic architecture. Also explain the pipe lining process.	10 Marks

UNIT-II

3	a)	Explain the three computational models used to describe embedded systems.	6 Marks
	b)	Illustrate the features and considerations of a processor in terms of programmers view.	8 Marks
		(OR)	
4	a)	How FSMD differs from FSM?	6 Marks
	b)	Differentiate between concurrent processes and sequential program model. Describe the concurrent processor model for a heartbeat monitoring system.	8 Marks

UNIT-III

5	a)	Distinguish between synchronous and asynchronous serial communications.	6 Marks
	b)	What is CAN Bus? Explain each field in a CAN frame.	8 Marks
		(OR)	
6	a)	Distinguish between RS232 and RS485 standards.	6 Marks
	b)	Explain the protocol architecture of Ethernet.	8 Marks

UNIT-IV

7	a)	Describe different objects of an operating system kernel.	6 Marks
	b)	What is a Semaphore? Explain with example, how you achieve task synchronization using semaphores.	8 Marks
		(OR)	
8	a)	Differentiate between pre-emptive and non pre-emptive operating systems.	6 Marks
	b)	What is inter task communication? How do you achieve it using message queues and mail boxes?	8 Marks

UNIT-V

9	a)	Discuss various techniques for embedding software into system.	7 Marks
	b)	Explain SWI instruction and its applications.	7 Marks
		(OR)	
10	a)	Compare the features of SHARC micro controller and ARM micro controller.	7 Marks
	b)	How PUSH and POPs are accomplished in ARM using LDM and STM instructions.	7 Marks

CODE No.:14BT70403 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

LIGHT WAVE COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	A light wave is travelling in a semiconductor medium (GaAs) of refractive index 3.6. It is incident on a different semiconductor medium (AlGaAs) of refractive index of 3.4 and the angle of incidence is 800. Will this result in total internal reflection? Comment on this result.	8 Marks
	b)	Explain the major advantages of optical fiber communication system over radio wave communication system.	6 Marks
		(OR)	
2	a)	Explain with a neat diagram, the parabolic refractive index p(r) and meridional ray paths in a multimode graded index fiber.	7 Marks
	b)	With the relevant diagrams, explain the different types of optical fibers by considering the number of modes and material composition of the core.	7 Marks

UNIT-II

3	a)	Explain, what is intermodal dispersion and how it could be reduced.	8 Marks
	b)	A step index multimode glass fiber has a core diameter of 70μm and cladding refractive index of 1.45. If it is to have a limiting intermodal dispersion δ_T of 10ns/km. Calculate the maximum bit rate for transmission over a distance of 10km.	6 Marks
		(OR)	
4	a)	What is meant by material dispersion? Derive its expression.	7 Marks
	b)	Explain, what do you understand by phase and group velocity of the signal transmitted in a fiber.	7 Marks

UNIT-III

5	a)	Define the normalized frequency for an optical fiber and explain its use in the determination of the number of guided modes propagating within a step index and graded index fibers.	8 Marks
	b)	A multimode graded index fiber exhibits total pulse broadening of 0.1μs over a distance of 15km. Estimate i) The maximum possible Bandwidth on the link assuming no inter symbol interference. ii) The pulse dispersion per unit length. iii) The bandwidth length product for the fiber.	6 Marks
		(OR)	
6	a)	The radiative and nonradiative recombination lifetimes of the minority carriers in the active region of a double hetero junction a LED are 60ns and 100ns respectively. Determine the total carrier recombination lifetime and the power internally generated within the device when the peak emission wavelength is 0.87μm at a drive current of 40mA.	8 Marks
	b)	Discuss about block codes and what block codes are suitable to optical communication.	6 Marks

UNIT-IV

7	a)	What are splices? Explain different types of splices.	7 Marks
	b)	Derive an expression for coupling of a total power from LED to single mode fiber.	7 Marks

(OR)

8	a)	With the help of diagrams, explain about lensing schemes for coupling improvement.	8 Marks
	b)	Explain the following terms: i) V-groove splicing. ii) Elastic tube splicing.	6 Marks

UNIT-V

9		Briefly describe the population inversion. With the aid of suitable diagrams, discuss the principles of operation of the laser.	14 Marks

(OR)

10		Explain the layered architecture of SONET/SDH with neat diagram.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

TELECOMMUNICATION SWITCHING SYSTEMS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the concept of 100-line switching system.	7 Marks
	b)	Briefly explain the working of a manual switching system with neat diagram.	7 Marks
		(OR)	
2	a)	Differentiate centralized and distributed SPC.	7 Marks
	b)	Discuss the concept of 3 stage combination switching.	7 Marks

UNIT-II

3	a)	Explain subscriber loop systems.	7 Marks
	b)	Explain switching hierarchy and routing.	7 Marks
		(OR)	
4		Explain transmission plan.	14 Marks

UNIT-III

5	a)	Differentiate in channel and common channel signaling.	7 Marks
	b)	A group of 20 servers carry a traffic of 10 Erlang. If the average duration of a call is 3 minutes, calculate the number of calls put through by a single server and the group as a whole in one hour period.	7 Marks
		(OR)	
6		Explain grade of service and blocking probability.	14 Marks

UNIT-IV

7		List various switching techniques used for data transmission in PSTN and explain.	14 Marks
		(OR)	
8		Explain network and protocol architecture.	14 Marks

UNIT-V

9		Discuss in detail ASDL.	14 Marks
		(OR)	
10	a)	Explain the frame format and frame transmission of a SONET signal.	7 Marks
	b)	Discuss about the synchronous transport signals of SONET.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

COMPILER DESIGN

[Computer Science and Engineering, Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define phase and pass. Differentiate single pass and multi pass compilers.	7 Marks
	b)	With a neat sketch, explain the phases of compiler.	7 Marks
		(OR)	
2	a)	What is the nee and role of Lexical analyzer?	7 Marks
	b)	What is the best notation for describing tokens? Explain.	7 Marks

UNIT-II

3	a)	Compare and contrast the **LL(1)** parser and recursive descent parser.	6 Marks
	b)	Compute the **First()** and **Follow()** symbols for the following grammar and find the grammar is **LL(1)** **E → TE'** **E' → +TE'/€** **T → FT'** **T' → *FT'/€** **F→ (E)/id.**	8 Marks
		(OR)	
4	a)	Define ambiguity. How to eliminate ambiguity explain with an example.	7 Marks
	b)	Consider the grammar given below **E → E+E | E-E | E*E | E/E | a | b**. Obtain leftmost and rightmost derivation trees and syntax trees for the string **a+b * a+b**.	7 Marks

UNIT-III

5	a)	Describe in detail about **S** attributed definitions and **L** attributed definitions.	7 Marks
	b)	Consider the CFG for a desk calculator **→E$ E → E+E|E-E|E*E|E/E|(E)|id** i) Write the semantic actions and Program fragment for the above grammar. ii) Construct the parse tree for the evaluation of the expression **23*5 + 4**.	7 Marks
		(OR)	
6	a)	What is meant by equivalence of type expressions? Explain.	7 Marks
	b)	Discuss in detail the specifications of a simple type checker.	7 Marks

UNIT-IV

7	a)	Design triples and quadruples representation of an expression. **a := b * -c + b * -c**	7 Marks
	b)	Identify the role of intermediate code generation in overall compiler design.	7 Marks
		(OR)	
8	a)	Discuss runtime storage management in detail.	7 Marks
	b)	Explain about data access procedures with example.	7 Marks

UNIT-V

9	a)	Construct an algorithm for DAG and point out the applications of DAG.	7 Marks
	b)	Explain the principles of source optimization in detail.	7 Marks
		(OR)	
10	a)	Elaborate on various function preserving techniques of loop optimization in code optimization phase.	7 Marks
	b)	Identify different object code forms in code generation phase and explain them.	7 Marks

CODE No.:14BT70502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

MOBILE COMPUTING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List any four limitations of mobile computing.	4 Marks
	b)	Draw the GSM architecture and explain the subsystems involved.	10 Marks
		(OR)	
2	a)	Illustrate the usage of SGSN and GGSN in GPRS architecture.	8 Marks
	b)	Explain the different security services provided by GSM.	6 Marks

UNIT-II

3	a)	With an example, explain the direct sequence spread spectrum method.	7 Marks
	b)	Discuss in detail about autocorrelation codes used in CDMA system.	7 Marks
		(OR)	
4	a)	Briefly explain about channels of IS-95 cdmaOne system.	7 Marks
	b)	With a neat sketch, describe in detail about the protocol layers of WCDMA.	7 Marks

UNIT-III

5	a)	What are the functions of home and foreign agents in the mobile IP protocol? How does an agent discover COA(s) when mobile station node visits a foreign network? When and how does a mobile node solicit an agent? How does agent advertisement differ from agent solicitation?	7 Marks
	b)	What is the difference between care-of address and co-located care-of address?	7 Marks
		(OR)	
6	a)	Describe transaction-oriented TCP. How does the integration of connection establishment, data transfer and close functions into one help in transmitting and receiving at the TCP nodes?	7 Marks
	b)	Describe in-direct TCP? Explain the modifications indirect TCP as the selective repeat protocol and mobile-end transport protocol. What are the advantages and disadvantages of indirect TCP?	7 Marks

UNIT-IV

7	a)	Explain query-processing architecture for processing a query using distributed database.	7 Marks
	b)	Explain the advantages of using an adaptation mechanism.	7 Marks
		(OR)	
8	a)	Describe digital video broadcasting. Show how it can facilitate mobile TV, high-speed internet access and convergence among networks.	7 Marks
	b)	Show architecture for data dissemination and broadcast. Explain the reasons for communication asymmetry in mobile network. Give examples for asymmetric communication architecture for data dissemination.	7 Marks

UNIT-V

9	a)	Describe service discovery mechanism used in Jini and UPnP.	7 Marks
	b)	Draw the mobile agent based architecture and give the advantages of a mobile agent.	7 Marks

(OR)

10	a)	Describe the features of SyncML protocol.	7 Marks
	b)	Analyze the different security issues of mobile computing domain and list the different solutions to overcome the problems.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

ANALYTICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is conductivity? Briefly explain the working of conductivity meter with the aid of neat sketch.	7 Marks
	b)	Explain the working principle of Dissolved Oxygen analyzer with neat diagram wherever is necessary.	7 Marks
		(OR)	
2	a)	Define pH and explain the working principle of pH meter with block diagram representation.	7 Marks
	b)	Explain the calibration process of pH meter and also preservation of pH cell.	7 Marks

UNIT-II

3		Discuss the method with neat sketch, which provides fast and accurate measurement of % levels of oxygen.	14 Marks
		(OR)	
4	a)	Explain the construction and working of NO_x analyzer.	7 Marks
	b)	Explain working of the SO_2 analyzer system with neat sketch.	7 Marks

UNIT-III

5		Compare and contrast the liquid and gas chromatography and mention their applications.	14 Marks
		(OR)	
6		List out different detection systems used in liquid chromatography and explain any two in detail.	14 Marks

UNIT-IV

7	a)	Explain the operation of double beam ratio recording spectrometer.	7 Marks
	b)	Explain about various radiation sources used in spectrometers.	7 Marks
		(OR)	
8	a)	Describe the operation of FTIR spectrophotometer.	7 Marks
	b)	Explain the operation of atomic emission spectrometer.	7 Marks

UNIT-V

9	a)	What is meant by Nuclear Magnetic Resonance? Explain the construction and working principle of Nuclear Magnetic Resonance spectrometer.	7 Marks
	b)	With necessary diagrams, explain the Proportional counter and Ionization chamber.	7 Marks
		(OR)	
10	a)	Explain in detail about Magnetic deflection type Mass spectrometer.	7 Marks
	b)	Write short notes on GM counter and give its applications.	7 Marks

CODE No.:14BT71201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

MOBILE APPLICATION DEVELOPMENT

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about mobile web presence and its applications.	7 Marks
	b)	Discuss the mobile information design.	7 Marks
		(OR)	
2	a)	Describe about effective use of screen real estate.	7 Marks
	b)	Discuss about mobile applications and its marketing issues.	7 Marks

UNIT-II

3	a)	Explain life cycle of an activity methods with neat sketch.	7 Marks
	b)	What is a View? Explain different android supported view groups with suitable examples.	7 Marks
		(OR)	
4	a)	Discuss the process of adding fragments dynamically with an example.	7 Marks
	b)	Distinguish between fragment and an activity in mobile application.	7 Marks

UNIT-III

5	a)	Write short notes on Toggle Button, Radio Button and Image Button.	6 Marks
	b)	Denote the program steps for displaying long lists using List View.	8 Marks
		(OR)	
6	a)	Describe about TimePicker View and DatePicker View.	6 Marks
	b)	Write a program to create options menu.	8 Marks

UNIT-IV

7	a)	Explain the steps for sending SMS messages programmatically and how to get feedback after sending a message.	7 Marks
	b)	Write the process of navigating the map to a specific location.	7 Marks
		(OR)	
8	a)	Briefly explain about consuming web services using HTTP.	7 Marks
	b)	Describe the procedure for obtaining the maps API key and explain programmatically zooming in or out of the map.	7 Marks

UNIT-V

9	a)	Describe building the derby app in iOS.	7 Marks
	b)	Explain about iOS tools.	7 Marks
		(OR)	
10	a)	Explain in detail the app design methodology using objective C.	7 Marks
	b)	How to create your own services in android? Explain in detail.	7 Marks

CODE No.:14BT71202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

MULTIMEDIA AND APPLICATION DEVELOPMENT

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Discuss Graphics and Image data types.	14 Marks
		(OR)	
2	a)	Explain features of action script.	7 Marks
	b)	List out various data types and type checking in action script.	7 Marks

UNIT-II

3		Describe OOP application framework.	14 Marks
		(OR)	
4	a)	Write an example program to illustrate constructor functions.	7 Marks
	b)	Differentiate the usage of Accessor methods and Setter & Getter methods with a suitable example for accessing private data.	7 Marks

UNIT-III

5	a)	Explain subclasses of Movieclip.	7 Marks
	b)	Discuss MPEG4.	7 Marks
		(OR)	
6		Write about:	
		i) Analog Video.	7 Marks
		ii) Digital Video.	7 Marks

UNIT-IV

7	a)	Explain the layers of MPEG-1 video bit stream.	7 Marks
	b)	Compare and contrast MPEG-1 and MPEG-2.	7 Marks
		(OR)	
8	a)	What are the advantages and disadvantages of Arithmetic coding as compared to Huffman coding?	7 Marks
	b)	Describe lossless JPEG compression algorithm.	7 Marks

UNIT-V

9	a)	Discuss various parameters to improve the quality of multimedia data transmission.	6 Marks
	b)	Explain RSVP and RTSP in detail.	8 Marks
		(OR)	
10	a)	Write short notes on ATM adaptation layer and multicast over ATM.	7 Marks
	b)	List various broadcast schemes for video-on-demand and explain any two of them.	7 Marks

CODE No.:14BT71203 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

SCRIPTING LANGUAGES

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the characteristics of scripting languages.	7 Marks
	b)	Identify the uses for scripting languages and web scripting.	7 Marks
		(OR)	
2	a)	Discuss in detail about scalar expressions in Perl.	7 Marks
	b)	Demonstrate strings, patterns and regular expression in Perl.	7 Marks

UNIT-II

3	a)	What is a package? Explain the importance of packages in Perl.	7 Marks
	b)	Explain security issues in Perl.	7 Marks
		(OR)	
4	a)	Explain the features of Python.	7 Marks
	b)	Differentiate Lists and Tuples in Python.	7 Marks

UNIT-III

5	a)	Create a text files that reads and displays the contents of a text file to the screen.	7 Marks
	b)	Discuss in detail about standard type operators in Python.	7 Marks
		(OR)	
6	a)	Identify the standard type operators in Python.	7 Marks
	b)	Give example for floating point real numbers and complex numbers in Python.	7 Marks

UNIT-IV

7	a)	Explain Errors and Exceptions in Python.	8 Marks
	b)	Write a Python script to create, write, read and close a file and explain about each method.	6 Marks
		(OR)	
8	a)	Write sample programs using the following statements and explain. i) If statement. ii) Else statement. iii) Elif statement. iv) While statement. v) For statement.	8 Marks
	b)	Explain about assertion standard exceptions in Python.	6 Marks

UNIT-V

9	a)	Discuss about scope rule in Python functions with suitable examples.	7 Marks
	b)	Explain about callable and code objects in Python.	7 Marks
		(OR)	
10	a)	Write a Python function to find sum of square-root of elements of a list. List is received as argument and function returns the sum. Ensure that your function is able to handle various situations viz. list containing numbers and strings, module required is imported etc.	6 Marks
	b)	What are modules? How will you import module and module attributes? What are the built in functions associated with modules? Highlight some of the important features of modules in Python.	8 Marks

CODE No.:14BT71204 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

SOFTWARE TESTING TECHNIQUES

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State and explain the principles of software testing.	7 Marks
	b)	Design the traceability matrix for scientific calculator.	7 Marks
		(OR)	
2	a)	Compare and contrast Defect, Error and Mistake.	7 Marks
	b)	Enumerate the salient features of good testing.	7 Marks

UNIT-II

3	a)	Distinguish between verification and validation.	7 Marks
	b)	Give the methods of verification.	7 Marks
		(OR)	
4	a)	How v-model is associated with the verification and validation in testing?	7 Marks
	b)	Design a verification workbench for ATM.	7 Marks

UNIT-III

5	a)	Design a flow graph for the logic involved in arithmetic calculator application.	7 Marks
	b)	List the tasks associated with a transaction through an example.	7 Marks
		(OR)	
6	a)	State the principle for good and bad state graphs? Draw the improper state graphs.	9 Marks
	b)	Discuss data flow anomalies through state graphs.	5 Marks

UNIT-IV

7	a)	Outline the significance of decision tables in logic based testing with an example.	8 Marks
	b)	Distinguish between good state graphs and bad state graphs.	6 Marks
		(OR)	
8		Write short notes on: i) Testability Tips. ii) KV Charts.	14 Marks

UNIT-V

9	a)	Explain when to use automated test tools. Discuss about different aspects of testing that can be automated.	8 Marks
	b)	Define the characteristics of a good test case and a good test scenario.	6 Marks
		(OR)	
10	a)	Explain the reasons for having planned and documented test plans.	7 Marks
	b)	Differentiate between test plan and quality plan.	7 Marks

CODE No.:14BT71205 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

MACHINE LEARNING

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the important objectives of machine learning? What are the approaches and design issues to machine learning?	7 Marks
	b)	Briefly describe inductive bias in decision tree learning.	7 Marks
		(OR)	
2		Explain Candidate Elimination algorithm with an example.	14 Marks

UNIT-II

3	a)	Explain Back Propagation algorithm and derive expressions for weight update relations.	7 Marks
	b)	Illustrate the tree representation and cross over operations of the function $\sin(x) + \sqrt{x^2 + y}$.	7 Marks
		(OR)	
4	a)	Differentiate the characteristics of an appropriate ANN problem.	7 Marks
	b)	Explain the steps in a prototypical genetic algorithm.	7 Marks

UNIT-III

5	a)	Describe briefly about Naïve Bayes classification.	10 Marks
	b)	Define maximum likelihood estimate.	4 Marks
		(OR)	
6		Describe Expectation Maximization algorithm.	14 Marks

UNIT-IV

7		Explain in detail about K-nearest Neighbor algorithm with an example.	14 Marks
		(OR)	
8	a)	Explain locally weighted regression and remarks on it.	7 Marks
	b)	Describe case based reasoning.	7 Marks

UNIT-V

9		Describe FOCL algorithm with example.	14 Marks
		(OR)	
10		Explain in detail about inductive analytical approaches.	14 Marks

CODE No.:14BT71502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

NETWORK PROGRAMMING

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Compare the services provided by TCP and UDP protocols.	7 Marks
	b)	Give detailed explanation on OSI model.	7 Marks
		(OR)	
2	a)	Discuss in detail about six exec functions.	7 Marks
	b)	Explain about connect and bind functions in detail.	7 Marks

UNIT-II

3	a)	Explain different I/O models with diagrams.	7 Marks
	b)	Describe the functionality provided by poll function.	7 Marks
		(OR)	
4	a)	Discuss about shutdown and batch input functions.	7 Marks
	b)	What are signals? Describe the method of SIGCHILD signals.	7 Marks

UNIT-III

5	a)	Give detailed explanation about gethostbyname function.	7 Marks
	b)	List various socket options available for IPV6.	7 Marks
		(OR)	
6	a)	Explain about lost datagram in detail.	7 Marks
	b)	Describe the process of determining outgoing interface with UDP.	7 Marks

UNIT-IV

7	a)	What is FIFO? Discuss in detail FIFO's with a client/server.	7 Marks
	b)	Discuss about shared memory in detail.	7 Marks
		(OR)	
8	a)	Describe about system V IPC.	7 Marks
	b)	Discuss in detail about file and record locking.	7 Marks

UNIT-V

9	a)	Discuss about control terminals.	7 Marks
	b)	Explain about terminal line disciplines.	7 Marks
		(OR)	
10	a)	Explain about RPC transparency issues.	7 Marks
	b)	Discuss in detail about rlogin.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

SIMULATION AND MODELING

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly explain simulation of inventory system.	7 Marks
	b)	Describe how arrays are used for list processing.	7 Marks
		(OR)	
2		Discuss in detail various features when selecting simulation software.	14 Marks

UNIT-II

3	a)	With suitable example, explain the following: i) Discrete random variable. ii) Continuous random variable.	7 Marks
	b)	Discuss briefly about useful statistical models.	7 Marks
		(OR)	
4	a)	Explain about empirical distribution.	7 Marks
	b)	With a suitable example, explain about binomial distribution.	7 Marks

UNIT-III

5		List out the measures of performance of queuing systems.	14 Marks
		(OR)	
6	a)	Describe the steady state behavior of finite population model.	7 Marks
	b)	The malfunctions occur in a widget making machines follows Poisson process with rate of malfunctions at 1.5 per hour. The repair times by the single mechanic takes with mean time of 30 minutes and standard deviation of 20 minutes. What is the steady time average number of broken machines?	7 Marks

UNIT-IV

7	a)	Explain linear congruential method. Write three ways of achieving maximal period.	7 Marks
	b)	What is acceptance-rejection technique? Generate three Poisson variates with mean $\alpha = 0.2$. The random numbers are 0.4357, 0.4146, 0.8353, 0.9952, 0.8004, 0.7945, 0.1530.	7 Marks
		(OR)	
8	a)	Generate five random numbers using multiplicative congruential method with $x_0 = 5$, a =10, m=64.	7 Marks
	b)	What is inverse transform technique? Derive an expression for exponential distribution.	7 Marks

UNIT-V

9	a)	Discuss about various methods for selecting families of input distributions when the data is available.	7 Marks
	b)	Describe the various parameters of Poisson distribution, Normal distribution and Gamma distribution.	7 Marks
		(OR)	
10		Elaborate on error estimation for steady state simulation.	14 Marks

CODE No.:14BT81503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2018

HUMAN COMPUTER INTERACTION

[Computer Science and Engineering, Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the benefits of good design? Explain.	7 Marks
	b)	Write the chronological history of GUI.	7 Marks
		(OR)	
2	a)	What are the characteristics of the GUI? Explain.	7 Marks
	b)	Describe about the popularity of web-user interface.	7 Marks

UNIT-II

3		List and explain psychological and physical user responses to poor design.	14 Marks
		(OR)	
4	a)	How the following characteristics of human influence the interface design: memory, visual acuity, information processing, movement control.	7 Marks
	b)	Outline the contributing factors that make traditional business systems difficult to use.	7 Marks

UNIT-III

5	a)	Explain about organizing and ordering of screen elements.	7 Marks
	b)	Write a short note on information retrieval on web.	7 Marks
		(OR)	
6	a)	Explain various qualities which provides visually pleasing composition.	7 Marks
	b)	Discuss in detail technological consideration in interface design.	7 Marks

UNIT-IV

7	a)	Explain the significance of window that allows the display workspace.	7 Marks
	b)	Identify the characteristics and capabilities of various device-based controls.	7 Marks
		(OR)	
8	a)	Illustrate the two broad categories of messages.	7 Marks
	b)	Explain various factors that influence an icon's usability.	7 Marks

UNIT-V

9	a)	Outline the factors among user interface building tools.	8 Marks
	b)	Explain the concept of discrete word recognition.	6 Marks
		(OR)	
10	a)	Compare various specification methods that are used for building user interface design	8 Marks
	b)	List and explain pointing devices that are applicable in six types of interaction tasks.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

MANAGEMENT SCIENCE

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about evolution of management thought.	CO1	7 Marks
	b)	Discuss the contributions of Henry Fayol to the management.	CO1	7 Marks
		(OR)		
2	a)	What is SWOT analysis? Explain it briefly.	CO1	7 Marks
	b)	Describe the different types of organizations.	CO1	7 Marks

UNIT-II

3	a)	Explain about ABC analysis.	CO1	7 Marks
	b)	Discuss in detail about materials management.	CO1	7 Marks
		(OR)		
4	a)	Describe the procedure involved in method study and work measurement.	CO2	7 Marks
	b)	Explain about acceptance sampling in detail.	CO2	7 Marks

UNIT-III

5	a)	Write about role of HR Manager in an organization.	CO1	7 Marks
	b)	What is job evaluation? Explain it briefly.	CO1	7 Marks
		(OR)		
6	a)	Describe the importance of Human Resource Management (HRM).	CO1	7 Marks
	b)	Explain about McGregor's theory X and theory Y.	CO1	7 Marks

UNIT-IV

7	a)	Distinguish between Entrepreneur and Manager.	CO2	7 Marks
	b)	Explain about Women as an entrepreneur.	CO2	7 Marks
		(OR)		
8		The following table gives the activities and duration of a construction project.	CO4	14 Marks

Activity	1-2	1-3	2-4	3-4	3-5	4-5	4-6	5-6
Duration (Days)	6	5	10	3	4	6	2	9

i) Draw the network for the project.
ii) Find critical path.
iii) Calculate all the floats involved in CPM.

UNIT-V

9	a)	Discuss in detail about Value chain analysis.	CO1	7 Marks
	b)	What is Just-In-Time (JIT)? Explain it briefly.	CO2	7 Marks
		(OR)		
10	a)	Write short notes on Business Process Outsourcing (BPO).	CO1	7 Marks
	b)	Explain the role of IT in managerial decision making.	CO3	7 Marks

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CODE No.:14BT40502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

DATABASE MANAGEMENT SYSTEMS

[Electrical and Electronics Engineering, Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain architecture of DBMS and its advantages.	CO1	7 Marks
	b)	Analyze the responsibilities of DBA and database designers.	CO2	7 Marks
		(OR)		
2	a)	What are problems with traditional file processing system? How they are removed in database system? Explain.	CO2	7 Marks
	b)	Discuss few types of database utilities and their functions.	CO1	7 Marks

UNIT-II

3	a)	What is role of participation? When is it necessary to use role names in description or relation types?	CO2	7 Marks
	b)	Discuss the naming conventions used for ER schema diagrams.	CO4	7 Marks
		(OR)		
4	a)	List the operations of the relational algebra and the purpose of each.	CO1	7 Marks
	b)	List aggregate functions commonly used in relational algebra. Give example for any three of them.	CO2	7 Marks

UNIT-III

5	a)	For the following relational database write the expressions in SQL: Branch(branchname, branchcity, Assets) Customer(customername, customerstreet, customercity) Loan(Branchname, loannumber, Amount) Borrower(Customername, loannumber) Account(Branchname, Accountnumber, Balance) Depositor(Customername, Accountnumber) i) Find the names of all branches in Loan Schema. ii) Find all customers having loan, account or both at bank. iii) Display customer names in alphabetical order, who have loan at the New York branch. iv) Find set of all customer names, who have an account at the bank.	CO3	7 Marks
	b)	Explain the integrity constraints supported by SQL.	CO5	7 Marks
		(OR)		
6	a)	Discuss the various update operation on relation and types of integrity constraints that must be checked for each update operation.	CO4	7 Marks
	b)	What do you understand by "normalization"? Explain 3rd, BCNF, 4th normal forms in detail by taking an example. Highlight the concept of various dependencies.	CO1	7 Marks

UNIT-IV

7	a)	What is two-phase locking and how does it guarantee serializability?	CO1	7 Marks
	b)	Discuss the different types of transaction failures. What is meant by catastrophic failure?	CO1	7 Marks
		(OR)		
8	a)	List out the protocols that are used to prevent deadlocks.	CO1	7 Marks
	b)	What is two phase locking? Describe with help of an example. Will two phase locking result in serialisable schedule? Will two phase locking result in deadlock? Justify your answer with the help of an example?	CO1	7 Marks

UNIT-V

9	a)	Compare Linear Hashing with Extendable Hashing.	CO2	7 Marks
	b)	What is primary index? In what way primary index is different from secondary and unique indexes? Briefly describe hash based indexing.	CO2	7 Marks

(OR)

10	a)	Explain the Index Sequential Access method.	CO1	7 Marks
	b)	With an example, explain B-Tree Index files.	CO2	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

EMBEDDED SYSTEMS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is a single purpose processor? What are the benefits of choosing a single purpose processor over a general purpose processor?	CO1	7 Marks
	b)	Discuss in detail about RT level combinational and sequential logic in single purpose processors.	CO1	7 Marks
		(OR)		
2	a)	Explain about the IC technology of an embedded system.	CO1	6 Marks
	b)	Define design metric and explain in detail about any four design metrics.	CO1	8 Marks

UNIT-II

3	a)	Explain in detail about hierarchical / concurrent state machine models with example.	CO2	7 Marks
	b)	Explain the concept of synchronization among concurrent process by condition variable with an example.	CO2	7 Marks
		(OR)		
4	a)	Write difference between		
		i) Computation model and language.	CO1	3 Marks
		ii) Textual language and a graphical language.	CO1	3 Marks
	b)	Explain briefly about communication among processes.	CO1	8 Marks

UNIT-III

5	a)	Describe the need for communication interfaces.	CO1	4 Marks
	b)	Write short notes on		
		i) RS232	CO1	5 Marks
		ii) USB	CO1	5 Marks
		(OR)		
6	a)	Explain about Ethernet.	CO1	7 Marks
	b)	Explain about I^2C bus.	CO1	7 Marks

UNIT-IV

7		Explain about different scheduling algorithms.	CO1	14 Marks
		(OR)		
8	a)	Explain about memory management.	CO1	7 Marks
	b)	Explain about priority inversion problem.	CO1	7 Marks

UNIT-V

9	a)	Explain briefly about loading software in to target machine.	CO1	7 Marks
	b)	Explain about debugging techniques.	CO1	7 Marks
		(OR)		
10	a)	Explain ARM pipelining concept.	CO1	7 Marks
	b)	Explain about ARM THUMB instructions.	CO1	7 Marks

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CODE No.:14BT71507 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

SOFTWARE PROJECT MANAGEMENT

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain Barry Boehm's Industrial software metrics.	CO1	7 Marks
	b)	What are the necessary basic parameters for software economics? Explain with examples.	CO2	7 Marks
		(OR)		
2		Analyse and explain how we can improve automation through software environments.	CO2	14 Marks

UNIT-II

3		Explain various principles of modern software engineering in detail.	CO1	14 Marks
		(OR)		
4		Describe Construction and Transition phases with examples.	CO2	14 Marks

UNIT-III

5		Analyse and explain Engineering and Pragmatic artifacts.	CO2	14 Marks
		(OR)		
6		Explain the work flow of an iteration and iteration emphasis across the life cycle with relevant figures.	CO2	14 Marks

UNIT-IV

7		Describe work beak down structures and software project team evolution over the life cycle.	CO4	14 Marks
		(OR)		
8		Explain Round-trip engineering and the primitive components of a software change order with relevant figures.	CO4	14 Marks

UNIT-V

9		Explain seven core metrics and quality indicators with figures.	CO2	14 Marks
		(OR)		
10		Describe Process Discriminants in detail.	CO1	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

PRESTRESSED CONCRETE

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Explain Freyssinet system of post tensioning with neat sketch.	CO1	14 Marks
	(OR)		
2	Explain various losses of prestress in pre-tensioning and post-tensioning.	CO1	14 Marks

UNIT-II

3	A simply supported prestressed concrete beam spanning over 10m is of rectangular section 500mm wide by 750mm deep. The beam is prestressed by a parabolic cable having an eccentricity of 200mm at the centre of the span and zero at the end supports. The effective force in the cable is 1600kN. If the beam supports a total uniformly distributed load of 40kN/m which includes the self weight, i) Evaluate the extreme fibre stresses at the mid span section using the internal resisting couple method. ii) Calculate the force required in the cable having the same eccentricity to balance a total load of 50kN/m on the beam.	CO2	14 Marks
	(OR)		
4	An unsymmetrical I-section beam is used to support an imposed load of 2kN/m over a span of 8m. The sectional details are top flange 300mm wide and 60mm thick, bottom flange 100mm wide and 60mm thick, thickness of the web is 80mm, overall depth of the beam is 400mm. At the centre of the span, the effective prestressing force of 100kN is located at 50mm from the soffit of the beam. Estimate the stresses at the centre of span section of the beam for the following load conditions. i) Prestress + Self weight. ii) Prestress + Self weight + live load.	CO2	14 Marks

UNIT-III

5	A pre-stressed concrete beam of uniform rectangular cross section and span 15 metres supports a total distributed load of 272 KN excluding the weight of the beam. Determine the suitable dimensions of the beam and calculate the area of the tendons and their position. The permissible stresses are 14 N/mm^2 for concrete and 1050 N/mm^2 for the tendons.	CO3	14 Marks
	(OR)		
6	A post tensioned prestressed beam of rectangular section 250mm wide is to be designed for an imposed load of 12kN/m, uniformly distributed on a span of 12m. The stress in concrete must not exceed17N/mm^2 in compression or 1.4 N/mm^{2}in tension at any time and the loss of prestress may be assumed to be 15%. Calculate :		
	i) the minimum possible depth of the beam	CO3	7 Marks
	ii) for the section provided, the minimum prestressing force and the corresponding eccentricity.	CO3	7 Marks

UNIT-IV

7	A pretensioned beam is prestressed using 5mm diameter wires with an initial stress of 80% of the ultimate tensile strength of the steel (f_{pu}=1600 N/mm^2). The cube strength of the concrete at transfer is 30N/mm^2.		
	i) Calculate the Transmission length.	CO2	7 Marks
	ii) Compute the bond stress at 1/4th and ½ of the transmission length from the end.	CO2	7 Marks
	(OR)		
8	Write a note on anchorage zone reinforcement with neat figures.	CO1	14 Marks

UNIT-V

9	Derive deflection equations due to prestressing force when;		
	i) The prestressing cable is parabolic with $e_{ends} = 0$	CO2	7 Marks
	ii) The prestressing cable is linearly varying with $e_{ends} = 0$	CO2	7 Marks
	(OR)		
10	Explain procedure for prediction of long term deflection of prestressed concrete members.	CO1	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

ESTIMATION, COSTING AND VALUATION

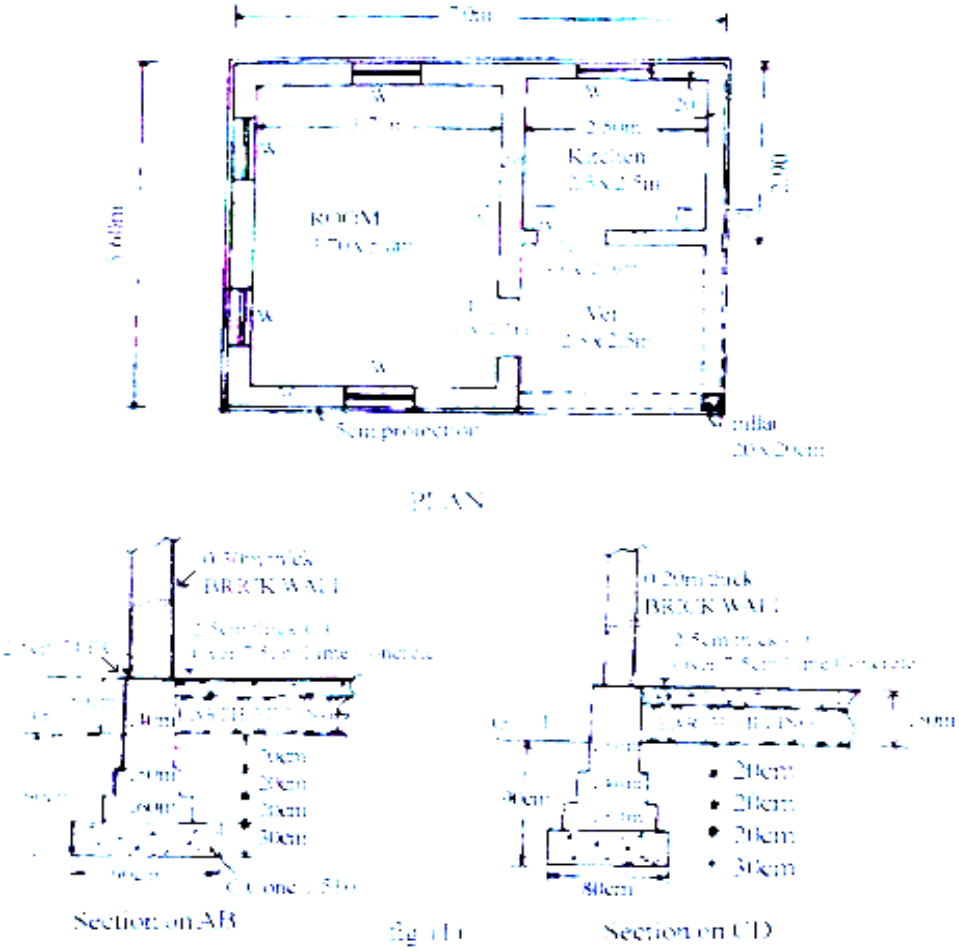
[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Estimate the quantities of single storied residential building from the given plan and section as shown in fig.(1) i) Earth work excavation in foundation. ii) Lime concrete in foundation. iii) First class brick work in superstructure.	CO2	14 Marks



(OR)

2	a)	What is approximate method of estimation and explain its importance.	CO1	7 Marks
	b)	Clearly distinguish between long wall and short wall method.	CO1	7 Marks

UNIT-II

3	a)	Calculate the quantity of earth work for 200 meters length for a portion of road in a uniform ground the heights of banks at the two ends being 1.00 meter and 1.50 meters. The formation width is 12.0 meters and side slopes 2:1 (Horizontal: Vertical). Assume that there is no transverse slope.	CO2	7 Marks
	b)	Calculate the quantity of cement concrete for cement concreting two kilometers length of 7.50 meters wide road for 8.50 cm thick layer. And also prepare a detailed estimate. Cost at the rate of Rs.750.00 per cu.m.	CO2	7 Marks

(OR)

4		Prepare a detailed estimate of a R.C.C beam of 4.0 m clear span, reinforcement details are shown in the longitudinal section fig (2). And the cross section of the beam is 75 cm x 40 cm. Steel in detail and R.C.C work shall be calculated separately. Also prepare a schedule of bars.	CO2	14 Marks

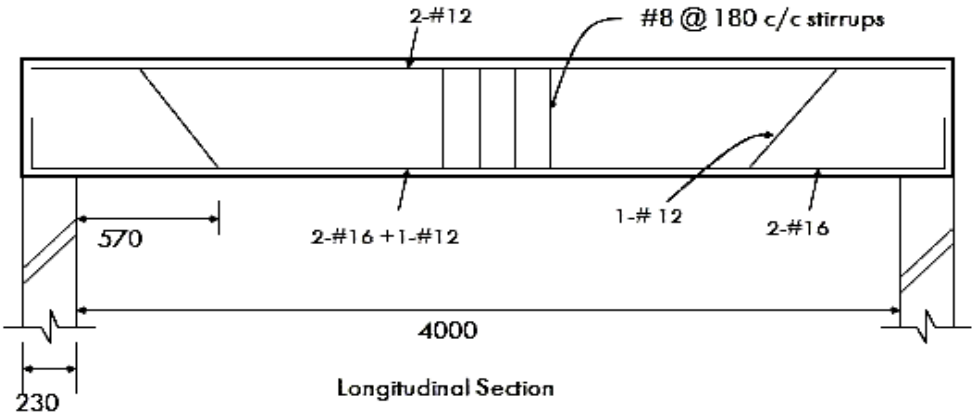


fig (2)

UNIT-III

5		Workout cost per unit for the following items of work. i) Brick work in CM (1:6) for foundation. ii) PCC in 1:3:6 for foundation.	CO3	14 Marks

(OR)

6	a)	What is the purpose and method of writing specification? Describe briefly general and detailed specification.	CO2	7 Marks
	b)	Write detail specification of RCC (1:2:4) for beam concrete and painting for walls.	CO2	7 Marks

UNIT-IV

7	a)	Discuss in brief about different contracts.	CO1	7 Marks
	b)	What is meant by arbitration? Explain advantages of setting the disputes by arbitration.	CO1	7 Marks

(OR)

8		Discuss about contract agreement and explain the preparation of tender for civil works.	CO3	14 Marks

UNIT-V

9		A three storied building has been constructed on a plot of land measuring 800m^2. The plinth area of each story is 400m^2. The life of the building structure may be taken as 70 years. The building fetches a gross rent of Rs 5000/- per month. Calculate the capitalized value of the property on the basis of 10% net yield. For sinking fund 3% compound interest may be assumed. Cost of land may be taken as Rs 500/- per m^2, other data required may be assumed suitably.	CO3	14 Marks

(OR)

10	a)	What do you mean by valuation and explain various purposes of valuation.	CO1	10 Marks
	b)	Explain capitalized value with example.	CO3	4 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

WATERSHED MANAGEMENT

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the need of watershed management. Discuss any one division of Government of India working for watershed management.	CO1	7 Marks
	b)	Define watershed management. Discuss the basic data required for watershed management.	CO1	7 Marks
		(OR)		
2	a)	Define wind erosion and under what conditions does it occur. List the variables involved in determine the erodibility of soil caused by wind.	CO2	7 Marks
	b)	Briefly discuss the important of watershed management in Indian perspective.	CO3	7 Marks

UNIT-II

3	a)	Differentiate between U-shape gully and V-shaped gully.	CO2	7 Marks
	b)	Discuss various soil erosion measures in a watershed.	CO2	7 Marks
		(OR)		
4	a)	Define Bench terracing. What are the components of components of Bench terrace?	CO2	7 Marks
	b)	Explain the different types of types of Bench terraces.	CO1	7 Marks

UNIT-III

5	a)	Briefly explain the important of soil moisture conservation.	CO1	7 Marks
	b)	Briefly explain Check dam, Farm pond and Percolations tanks.	CO1	7 Marks
		(OR)		
6	a)	Define Saline and Alkaline soil.	CO1	7 Marks
	b)	Explain the procedure for the reclamation of Saline and Alkaline soil.	CO1	7 Marks

UNIT-IV

7	a)	Explain briefly the following with example: i) Inter cropping. ii) Mixed cropping. iii) Strip cropping.	CO1	7 Marks
	b)	Write short notes on: i) Dry land agriculture. ii) Horticulture. iii) Silviculture. iv) Afforestation.	CO1	7 Marks
		(OR)		
8	a)	Define ecosystem. Explain the role of ecosystem in watershed management.	CO1	7 Marks
	b)	Briefly discuss sustainable agriculture and how sustainable agriculture can be obtained in present scenario.	CO3	7 Marks

UNIT-V

9	a)	Briefly discuss the indicators and stages for watershed program evaluation.	CO2	7 Marks
	b)	Discuss different planning activities required for a watershed development Plan.	CO3	7 Marks
		(OR)		
10	a)	Define monitoring of watershed programs.	CO1	7 Marks
	b)	Explain the purpose of monitoring with advantages.	CO2	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

INDUSTRIAL WASTE WATER TREATMENT

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the characteristics of the Treatment Plant Effluent.	CO1	6 Marks
	b)	What is DO and BOD? Derive the relation between them.	CO1	8 Marks
		(OR)		
2	a)	What are the toxic substances present in the industrial wastes and explain their permissible limits.	CO2	7 Marks
	b)	Write short notes on Bar screens.	CO1	7 Marks

UNIT-II

3	a)	Explain the metabolism of organic substrates.	CO1	7 Marks
	b)	Write in detail about trickling filters with a neat sketch.	CO2	7 Marks
		(OR)		
4		Derive an expression to calculate the oxygen requirement in Aerobic processes.	CO2	14 Marks

UNIT-III

5		Describe in detail about aerobic treatment studies in continuous flow reactor.	CO3	14 Marks
		(OR)		
6		Explain the following:		
		i) Nitrogen removal by biological nitrification.	CO1	7 Marks
		ii) U – Tube aeration system.	CO1	7 Marks

UNIT-IV

7		Describe kraft pulp and paper mill with a neat flow diagram.	CO2	14 Marks
		(OR)		
8		Write short notes on the following: i) Electro dialysis. ii) Adsorption. iii) Reverse osmosis. iv) Floatation.	CO1	14 Marks

UNIT-V

9	a)	What are the sources of waste water in Tanning industries?	CO1	7 Marks
	b)	With a neat flow diagram, explain the stages involved in Tanning process.	CO2	7 Marks
		(OR)		
10		Explain the treatment process of waste water in sugar mill.	CO3	14 Marks

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CODE No.:14BT80110 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

GROUND IMPROVEMENT TECHNIQUES

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the role of ground improvement on foundations.	CO1	7 Marks
	b)	Discuss the suitability of ground improvement techniques for different soils.	CO1	7 Marks
		(OR)		
2	a)	Explain methods of ground improvement and illustrate with the help of diagrams.	CO2	7 Marks
	b)	Report the selection criterion for ground improvement based on soil conditions.	CO1	7 Marks

UNIT-II

3	a)	List out the various drainage techniques and illustrate the same with the help of diagrams.	CO2	7 Marks
	b)	Illustrate flow-net for a weir with Cuff off wall on i) Upstream ii) Down Stream.	CO1	7 Marks
		(OR)		
4	a)	Discuss about Well point system.	CO1	7 Marks
	b)	Demonstrate dewatering using sumps and ditches with the help of neatly labeled sketch.	CO2	7 Marks

UNIT-III

5	a)	Explain the need of densification of soils.	CO1	7 Marks
	b)	Give examples of laboratory versus field densification methods.	CO1	7 Marks
		(OR)		
6	a)	Illustrate the principles of densification of granular and cohesive soils.	CO1	7 Marks
	b)	List the factors that affect compaction.	CO1	7 Marks

UNIT-IV

7	a)	List various types of grouts and mention the applicability of each.	CO1	7 Marks
	b)	Review the applicability of grouting equipment and machinery.	CO1	7 Marks
		(OR)		
8	a)	Review stabilisation of expansive soils with the help of neatly labeled sketches.	CO1	7 Marks
	b)	Contrast “Gunting with Shotcreting”.	CO1	7 Marks

UNIT-V

9	a)	Discuss why earth need to be reinforced?	CO2	7 Marks
	b)	Illustrate with the help of neatly labeled sketches: “Types of reinforcement materials.”	CO2	7 Marks
		(OR)		
10	a)	Discuss the functions of geosythetics.	CO1	7 Marks
	b)	Discuss the uses of geosythetics.	CO2	7 Marks

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CODE No.: 14BT80113 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

ARCHITECTURE AND TOWN PLANNING

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain design principles and basic elements of architecture with suitable examples	CO1	7 Marks
	b)	Describe in detail the significance and role of mass, scale and proportion in the aesthetic design of buildings.	CO1	7 Marks
		(OR)		
2	a)	Discuss the significance of social and demographic surveys.	CO1	7 Marks
	b)	Write a detailed note on various regulations to be considered for planning a layout.	CO1	7 Marks

UNIT-II

3	a)	Compare garden cities with satellite towns.	CO2	7 Marks
	b)	Write a detailed note on application of anthropometry and space standards in building architecture.	CO2	7 Marks
		(OR)		
4	a)	Write a detailed note on problems associated with housing in metropolis in context of India.	CO1	7 Marks
	b)	Write a detailed note on various causes of environmental pollution with appropriate examples wherever required.	CO4	7 Marks

UNIT-III

5		Write a brief note on the following terms used in architecture. i) Quattrocento. ii) High renaissance.	CO1	14 Marks
		(OR)		
6	a)	Define town planning. Explain in detail various aims and objectives of town planning.	CO1	7 Marks
	b)	Explain the importance of courtyard in town planning.	CO2	7 Marks

UNIT-IV

7	a)	Explain occupancy classification of buildings.	CO1	7 Marks
	b)	Write a note on role of architects and planners in the following. i) Texture selection. ii) Composition of space.	CO1	7 Marks
		(OR)		
8		Write a comprehensive note on building byelaws also explain the importance of byelaws in architecture.	CO4	14 Marks

UNIT-V

9	a)	Explain relation between engineering and architecture.	CO1	7 Marks
	b)	Mention the importance of architectural drawings.	CO1	7 Marks
		(OR)		
10		Explain basic criteria affecting the internal planning of commercial complex and explain how you provide lightning without any electrical fittings.	CO3	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

UTILIZATION OF ELECTRICAL ENERGY

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the concept of load equalization. Derive load equalization for increasing load condition.	CO1	7 Marks
	b)	A 3-phase 100Kw, 6-pole, 50Hz, full load speed of 960 r.p.m. induction motor has a constant load of 600N-m at wide intervals and it is subjected to additional torque of 2400N-m for 10 seconds. Calculate the moment of inertia of the flywheel used for load equalization, if motor torque is not to exceed twice the full load torque. The moment of inertia of the motor is 200kg-m^2.	CO4	7 Marks
		(OR)		
2	a)	Derive an expression for temperature rise of an electrical machine using heating curve.	CO2	7 Marks
	b)	The full load temperature rise of totally enclosed motor is 20^{0}C after one hour and 34^{0}C after two hours. Find i) the heating time constant. ii) final steady temperature rise on full load.	CO4	7 Marks

UNIT-II

3	a)	Explain about laws of illumination in detail.	CO1	7 Marks
	b)	Two lamps are hung at a height of 9 metres from the floor level. The distance between the lamps is 2 metres. Lamp one is of 500 CP. If the illumination on the floor vertically below this lamp is 20 lux, find CP of lamp two.	CO4	7 Marks
		(OR)		
4	a)	Compare the merits and demerits of filament lamps and fluorescent lamps.	CO1	7 Marks
	b)	Two similar lamps having uniform intensity of 500 CP in all directions below the horizontal are mounted at a height of 4 metres. What must be the maximum spacing between the lamps so that the illumination on the ground midway between the lamps shall be at least one half of the illumination directly under the lamp?	CO4	7 Marks

UNIT-III

5	a)	Explain the designing concept of circular type heating element.	CO3	7 Marks
	b)	A 2.5Kw, 240V, single phase resistance oven is to have nichrome wire heating elements. If the wire temperature is to be 1500 ^{0}C and that of the charge 450 ^{0}C, estimate the diameter and length of wire. The resistivity of nichrome alloy is 42.5 μΩ-cm. Assume the radiating efficiency and the emissivity of the element as 1.0 and 0.9 respectively.	CO3	7 Marks
		(OR)		
6	a)	What are the differences between electric resistance welding and arc welding?	CO1	7 Marks
	b)	Explain in detail about spot welding with neat sketch.	CO1	7 Marks

UNIT-IV

7	a)	Describe the systems of track electrification in detail.	CO1	7 Marks
	b)	Explain in detail about regenerative braking applied to induction motor.	CO5	7 Marks
		(OR)		
8	a)	Explain in detail about rheostatic braking applied to induction motor.	CO5	7 Marks
	b)	Write the limitations of various methods of electric braking.	CO1	7 Marks

UNIT-V

9	a)	Derive an expression for specific energy consumption of a quadrilateral speed-time curve.	CO2	7 Marks
	b)	An electrical train weighs 200 tonnes and accelerates uniformly on level track to a speed of 43Kmph in 20Sec. Power is then cut off and the train coasts until the speed is 34Kmph, when brakes are applied and the train is brought to rest in 10Sec. Allowing a train resistance of 5Kg/tonne during acceleration, 6.5Kg/tonne during coasting. Allow 12% rotational inertia, calculate specific energy consumption and total energy consumption if the overall efficiency is 90%.	CO4	7 Marks

(OR)

10	a)	Derive an expression for the maximum speed of a trapezoidal speed-time curve.	CO2	7 Marks
	b)	What is coefficient of adhesion? How does it affect the slipping of the driving wheels of the traction unit?	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

HVDC AND FACTS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	With a neat sketch, explain different types of DC links available in HVDC transmission.	CO1	7 Marks
	b)	Discuss relative merits and demerits of HVDC transmission over AC transmission.	CO2	7 Marks
		(OR)		
2	a)	Explain the operation of a twelve pulse converter with a neat sketch and waveforms.	CO3	9 Marks
	b)	Explain the effect of pulse number on HVDC converters.	CO2	5 Marks

UNIT-II

3	a)	Explain the following terms: i) Firing angle. ii) Overlap angle. iii) Extinction angle.	CO1	5 Marks
	b)	Explain the convertor control characteristics of HVDC systems.	CO1	9 Marks
		(OR)		
4	a)	State harmful effects of AC and DC harmonics in HVDC.	CO1	4 Marks
	b)	What are the various types that are employed in HVDC system and discuss them in detail?	CO2	10 Marks

UNIT-III

5	a)	What is the importance of reactive power control in transmission line? Briefly explain how reactive is controlled in transmission lines using conventional methods.	CO2	8 Marks
	b)	Explain the basic type of FACTS controllers.	CO1	6 Marks
		(OR)		
6	a)	What is the importance of transmission line interconnection?	CO1	7 Marks
	b)	Mention some of the possible benefits of FACTS controllers.	CO1	7 Marks

UNIT-IV

7	a)	Briefly explain the variable impedance type static VAR generators.	CO1	7 Marks
	b)	Briefly explain the operation of STATCOM.	CO1	7 Marks
		(OR)		
8	a)	Distinguish between SSSC and TCSC.	CO2	8 Marks
	b)	Explain the objective of series compensation, how it is achieved with the SSSC.	CO2	6 Marks

UNIT-V

9		Draw and explain overall UPFC control scheme.	CO1	14 Marks
		(OR)		
10		Show that real and reactive power flow control is independent in UPFC.	CO2	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

POWER QUALITY

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain magnitude-duration plot of voltage sag with relevant graph.	CO1	7 Marks
	b)	Outline the responsibilities of utility supplier and end user of electric power to avoid power quality issues.	CO2	7 Marks
		(OR)		
2	a)	List and explain various voltage related terminologies used in power quality.	CO4	7 Marks
	b)	Explain the power quality standards significance and list the various standards.	CO1	7 Marks

UNIT-II

3	a)	Explain various indexes used to estimate voltage sag.	CO1	7 Marks
	b)	Briefly explain the sources of sag and interruptions in power system.	CO1	7 Marks
		(OR)		
4	a)	Outline the overview of various mitigation methods in power system.	CO1	6 Marks
	b)	Explain the occurrence of under voltage, over voltage and outages with examples and necessary diagram.	CO1	8 Marks

UNIT-III

5	a)	Explain how the phenomenon of current distortion affects the voltage distortion under the presence of harmonics.	CO1	9 Marks
	b)	Discuss the harmonic distortion controlling process steps.	CO1	5 Marks
		(OR)		
6	a)	Describe the process of harmonic distortion evaluation on the utility system.	CO1	8 Marks
	b)	Explain the fundamentals of harmonic generation and waveform distortion.	CO1	6 Marks

UNIT-IV

7	a)	Discuss various factors to be considered in monitoring of power quality and also choosing the locations.	CO1	8 Marks
	b)	Explain the importance of power quality monitoring equipments and list out the various types.	CO1	6 Marks
		(OR)		
8		Explain the operation and features of following monitoring equipments with neat diagram. i) Spectrum Analyzer. ii) Flicker Meters.	CO2	14 Marks

UNIT-V

9	a)	Explain how network reconfiguration will enhance the power quality by using custom power device.	CO1	7 Marks
	b)	Discuss the operation of solid state current limiter with schematic diagram.	CO2	7 Marks
		(OR)		
10	a)	Describe the operation of any two compensating custom power devices.	CO2	7 Marks
	b)	Illustrate with appropriate custom power device used for eliminating the harmonics.	CO3	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

EHVAC TRANSMISSION

[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 important conclusions that can be drawn relating to power handling capacity of AC transmission lines and line losses?	CO2	7 Marks
	b)	Explain the properties of bundled conductors in EHVAC lines.	CO1	7 Marks
		(OR)		
2	a)	Explain about the sequence inductances and sequence capacitances.	CO1	7 Marks
	b)	Derive the relation for line capacitance calculation of a single phase line.	CO2	7 Marks

UNIT-II

3	a)	Explain about the surface gradient on single conductor.	CO2	7 Marks
	b)	Explain about the maximum surface voltage gradient with more than three conductors.	CO2	7 Marks
		(OR)		
4	a)	Explain about the surface voltage gradient on 2-conductor bundle.	CO2	8 Marks
	b)	A 735KV line has the following parameters: N = 4, r = 0.0176m, distance B = 0.4570m for the bundled conductor of each phase. The line height and phase spacing in horizontal configuration are H = 15m and S = 15m. Calculate the maximum surface voltage gradients on the centre phase and the outer phases.	CO3	6 Marks

UNIT-III

5	a)	Derive the expressions for corona current.	CO2	7 Marks
	b)	For r = 1cm, H = 5m and f = 50Hz, calculate corona loss and current according to Peek's formula and Ryan-Henline formulas when $E = 1.1E_0$ and $\delta = 1$.	CO3	7 Marks
		(OR)		
6	a)	Explain the generation, characteristics and limits of audible noise due to corona.	CO1	8 Marks
	b)	Explain Radio Interference due to corona.	CO1	6 Marks

UNIT-IV

7	a)	Derive the equations for calculation of electrostatic field of single phase three phase line.	CO2	7 Marks
	b)	Discuss the effect of high electrostatic field on plant life and vehicles.	CO1	7 Marks
		(OR)		
8	a)	Write short note on: i) Shunt reactors at both ends and series capacitor at middle of the line. ii) Series capacitor compensation at line center	CO1	9 Marks
	b)	Explain the procedure for measurement of electrostatic fields.	CO1	5 Marks

UNIT-V

9	a)	Explain the voltage control in EHVAC lines by shunt and series compensation.	CO1	7 Marks
	b)	What are the problems at the power frequency?	CO1	7 Marks
		(OR)		
10		Explain about SVC schemes in detail.	CO1	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

SMART GRID TECHNOLOGY

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define smart grid. Specify the functions of smart gird.	CO1	7 Marks
	b)	Discuss about the architecture of Distribution Management System Controller.	CO1	7 Marks
		(OR)		
2	a)	What are the initiatives taken by Indian economy for smart grid?	CO4	7 Marks
	b)	Give an overview of the technologies required for smart grid.	CO1	7 Marks

UNIT-II

3	a)	Distinguish between dedicated and shared communication channels with examples.	CO2	7 Marks
	b)	A step-index multimode fibre has a core of refractive index 1.5 and cladding of refractive index 1.485. i) What is the maximum allowable angle of acceptance for refraction on core–cladding surface? ii) If the length of the fibre is 500m, what is the difference of distance of travel between the longest and shortest signal path?	CO3	7 Marks
		(OR)		
4	a)	Explain about IEEE 802 architecture for Local Area Networks.	CO2	7 Marks
	b)	Write a brief note on power line communication.	CO1	7 Marks

UNIT-III

5		Discuss in brief about the following: i) Data Encryption Standard ii) Public Key Encryption	CO1	14 Marks
		(OR)		
6	a)	How data authentication is done based on shared secret key? Write down the steps involved in the process.	CO1	7 Marks
	b)	List out the security measures included in the standard IEC 62351: Power systems management and associated information exchange.	CO4	7 Marks

UNIT-IV

7	a)	Compare conventional metering with smart metering.	CO2	7 Marks
	b)	Give importance of HAN in smart grid.	CO1	7 Marks
		(OR)		
8		Discuss about various services provided by demand side integration in smart grid environment.	CO2	14 Marks

UNIT-V

9	a)	How does distribution lines and transformers are modeled for the power system network analysis?	CO3	7 Marks
	b)	Explain various characteristics of SCADA.	CO1	7 Marks
		(OR)		
10		Discuss about the operation of following analysis tools in transmission management system: i) Fault analysis. ii) State estimation. iii) Contingency analysis.	CO3	14 Marks

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CODE No.: 14BT80209 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

SOLAR AND WIND ENERGY CONVERSION SYSTEMS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss how the maximum power operation can be achieved using power control scheme?	CO3	7 Marks
	b)	Explain the different reasons for rotor speed control and discuss the regions of rotor speed control.	CO3	7 Marks
		(OR)		
2	a)	Explain the different environmental aspects to be considered for wind farm settings.	CO3	7 Marks
	b)	Discuss the classification of wind energy conversion systems.	CO1	7 Marks

UNIT-II

3	a)	Draw and explain I-V characteristic of the PV module.	CO1	7 Marks
	b)	Explain different methods of extracting the peak power from a PV source.	CO1	7 Marks
		(OR)		
4	a)	Draw and explain the solar thermal power plant schematic for generating electricity.	CO2	7 Marks
	b)	Discuss different thermal energy collection techniques in detail.	CO1	7 Marks

UNIT-III

5	a)	Discuss the importance of MPPT in Grid connected solar PV system.	CO2	7 Marks
	b)	Analyze the importance of VSI and CSI in solar PV system.	CO2	7 Marks
		(OR)		
6	a)	Explain the operation of line commutated inverters used in solar energy system.	CO2	7 Marks
	b)	Explain the operation of AC power conditioners used in solar energy system.	CO2	7 Marks

UNIT-IV

7	a)	Explain various grid related problems in detail.	CO1	7 Marks
	b)	Discuss the concept of generator control in wind energy conversion system.	CO2	7 Marks
		(OR)		
8	a)	Explain the operation of induction generator in wind energy conversion system.	CO3	10 Marks
	b)	Discuss the role of AC voltage controllers in wind energy conversion system.	CO3	4 Marks

UNIT-V

9	a)	Explain, how the voltage can be regulated using DSTATCOM.	CO2	10 Marks
	b)	Explain the role of custom power devices in distributed generation.	CO1	4 Marks
		(OR)		
10		Explain the structure and operation of UPQC.	CO1	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

PRODUCTION AND OPERATIONS MANAGEMENT

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Enumerate operations management with a block diagram.	CO2	7 Marks
	b)	Discuss in brief about the scope of operations management.	CO1	7 Marks
		(OR)		
2		Enlist the factors influencing productivity. Explain how each factor will affect productivity.	CO3	14 Marks

UNIT-II

3	a)	Discuss in brief about various judgmental methods of forecasting.	CO1	7 Marks
	b)	List out the advantages, limitations of both time series and moving average methods of forecasting.	CO1	7 Marks
		(OR)		
4		Estimate the sales forecast for the year 2000, using exponential smoothing forecaster. Take $\alpha = 0.5$ and the forecast for the year 1995 as 160×10^5 units. Compare the forecast with least square method.	CO2	14 Marks

Year	1995	1996	1997	1998	1999
Sales Rs.($\times 10^5$)	180	168	159	170	188

UNIT-III

5	a)	Discuss in brief about the need for aggregate production planning.	CO1	7 Marks
	b)	Write a brief note on various planning hierarchies in operations.	CO1	7 Marks
		(OR)		
6		"Mixed strategies are always superior to the pure strategy in an aggregate production planning exercise". Comment on this statement.	CO5	14 Marks

UNIT-IV

7		Define MRP? Discuss about its inputs, outputs and the logic used in material requirement planning.	CO2	14 Marks
		(OR)		
8	a)	Write a short note on Enterprise Resource planning.	CO1	7 Marks
	b)	Explain in brief about the pull method of material flow in just in time manufacturing.	CO1	7 Marks

UNIT-V

9		List out the assumptions in flow shop scheduling. Consider the following 3 machines and 5 jobs flow shop problem. Check whether Johnson's rule can be extended to this problem. If so, what is the optimal schedule and the corresponding make span?	CO4	14 Marks

Job	Machine 1	Machine 2	Machine 3
1	11	10	12
2	13	8	20
3	15	6	15
4	12	7	19
5	20	9	7

(OR)

10	a)	Explain how the Bull whip effect impacts the supply chain.	CO4	7 Marks
	b)	Discuss in detail about the role of information technology in supply chain management.	CO4	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

MECHATRONICS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the key elements of Mechatronics? Explain with the neat sketch.	CO1	7 Marks
	b)	What is the significance of Mechatronics with reference to CNC system?	CO2	7 Marks
		(OR)		
2		By taking the digital camera as example, differentiate intelligent machine with automatic machine.	CO2	14 Marks

UNIT-II

3	a)	Distinguish between Hydraulics and Pneumatics systems.	CO2	4 Marks
	b)	What is Electro-mechanical transient performance? Derive mathematical solution for linear torque-speed characteristic.	CO2	10 Marks
		(OR)		
4		Write about:		
		i) Piezoelectric actuators.	CO1	5 Marks
		ii) DC servo motor.	CO1	5 Marks
		iii) Stepper Motors.	CO1	4 Marks

UNIT-III

5		Classify discrete time signals with examples for each.	CO2	14 Marks
		(OR)		
6		Explain the different types of Transform-Domain Representation of Discrete Signals Systems.	CO1	14 Marks

UNIT-IV

7		What are the different addressing modes of 8051 microcontroller? Explain each with suitable examples.	CO2	14 Marks
		(OR)		
8	a)	What you mean by ADC? Explain the working of Flash ADC with neat sketch.	CO2	7 Marks
	b)	Explain the working of R-2R Ladder DAC.	CO1	7 Marks

UNIT-V

9		Design a system involving a PLC for the coin-operated barriers for a car park.	CO4	14 Marks
		(OR)		
10	a)	Explain about the working principle of PID controller with a neat sketch.	CO2	7 Marks
	b)	Explain different types of Control modes.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

ADVANCED CASTING TECHNOLOGY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the properties and applications of Cu-alloys.	CO1	7 Marks
	b)	Discuss about Epoxy Resins and Al-alloys as patterns and dies.	CO1	7 Marks
		(OR)		
2	a)	Describe the properties and applications of Al-alloys.	CO1	7 Marks
	b)	Explain any two important pattern making machines.	CO1	7 Marks

UNIT-II

3	a)	Describe the types and uses of filters.	CO1	7 Marks
	b)	Explain the solidification of eutectic alloys.	CO1	7 Marks
		(OR)		
4	a)	Discuss Computer Aided Design of Risers.	CO1	7 Marks
	b)	What is directional solidification? Explain its significance and factors affecting them.	CO2	7 Marks

UNIT-III

5	a)	Describe the working of Arc furnaces.	CO1	7 Marks
	b)	Explain the melting practices of Al and Mg-alloys.	CO1	7 Marks
		(OR)		
6	a)	Explain about de-oxidation and alloy additions in melting practice.	CO1	7 Marks
	b)	How energy is saved in melting practices?	CO2	7 Marks

UNIT-IV

7	a)	Explain the advantages and applications of Resin bonded sands.	CO1	7 Marks
	b)	Explain ceramic molding.	CO1	7 Marks
		(OR)		
8	a)	Explain vacuum molding.	CO1	7 Marks
	b)	Discuss about Monorail and Auto pour systems.	CO1	7 Marks

UNIT-V

9	a)	Describe continuous casting processes and applications.	CO3	7 Marks
	b)	Explain the limitations and applications of centrifugal casting.	CO1	7 Marks
		(OR)		
10		Discuss pressure and squeeze die casting process along with advantages, limitations and applications.	CO3	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

QUALITY MANAGEMENT AND RELIABILITY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write a short note on ISO 9000 Quality Management System.	CO1	4 Marks
	b)	"ISO certification quality system speaks about the company's commitment for Customer service". Do you agree? Substantiate your answer with suitable examples.	CO2	10 Marks

(OR)

2	a)	Classify and briefly describe various types of Poka-Yokes.	CO1	6 Marks
	b)	Discuss the merits of Quality Function Deployment (QFD) and explain how QFD is meritorious as compared to other approaches to achieve Total Quality Management.	CO2	8 Marks

UNIT-II

3		Write a short notes on: i) DMAIC. ii) DMADV. iii) Design for Six Sigma.	CO1	14 Marks

(OR)

4		A quality control inspector at the Cocoa Fizz soft drink company has taken twenty samples with four observations each of the volume of bottles filled. The data and the computed means are shown in the table. Use this information to determine process mean and whether the process is in control for the operation. (for sample size n=4, A_2=0.73, D_3 = 0, D_4=2.28)	CO3	14 Marks

Sample Number	Observations (Volume in Oz.)				Sample Number	Observations (Volume in Oz.)			
	S1	S2	S3	S4		S1	S2	S3	S4
1	15.85	16.02	15.83	15.93	11	16.11	16.00	16.01	15.82
2	16.12	16.00	15.85	16.01	12	15.72	15.85	16.12	16.15
3	16.00	15.91	15.94	15.83	13	15.85	15.76	15.74	15.98
4	16.20	15.85	15.74	15.93	14	15.73	15.84	15.96	16.10
5	15.74	15.86	16.21	16.10	15	16.20	16.01	16.10	15.89
6	15.94	16.01	16.14	16.03	16	16.12	16.08	15.83	15.94
7	15.75	16.21	16.01	15.86	17	16.01	15.93	15.81	15.68
8	15.82	15.94	16.02	15.94	18	15.78	16.04	16.11	16.12
9	16.04	15.98	15.83	15.98	19	15.84	15.92	16.05	16.12
10	15.64	15.86	15.94	15.89	20	15.92	16.09	16.12	15.93

UNIT-III

5		Compare and contrast various sampling plans in respect to their performance, merits and demerits.	CO2	14 Marks

(OR)

6		A production shop decides to use single sampling plan to inspect its products which are offered in lots of 1000 items for inspection. The management wants to know the effect of sample on operating characteristics. However, it is decided that number of defective items should not be more than 2 in a sample. If three sets of experiments are conducted with three samples of sizes 50, 60 and 100, discuss the effect of the sample size on the probability of acceptance by constructing the OC curve.	CO3	14 Marks

UNIT-IV

7	a)	Discuss the important regions of a bath tub curve using a neat sketch.	CO2	8 Marks
	b)	Define and explain the terms MTBF, MTBM, MTTF and MTTR.	CO1	6 Marks

(OR)

8		A, B and C are three components in series with reliabilities R_A, R_B, R_C respectively. Components D and E which are in series with reliabilities R_D, R_E respectively are parallel to component B. Deduce the expression for the overall reliability of the system.	CO2	14 Marks

UNIT-V

9		An old electronic system consists of five vaccum tubes whose MTBF is 10,000h. Now, when the system is fitted with 20 integrated chips (IC's), the MTBF is increased to 80,000h. Find the effect of IC's on the reliability of the system. If transistors are used instead of IC's, we require 40 transistors. Evaluate if the transistors can be used.	CO3	14 Marks

(OR)

10		Describe in detail following terms with suitable examples. i) Operating Availability. ii) Intrinsic Availability. iii) Achieved Availability.	CO2	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

NON-CONVENTIONAL ENERGY SOURCES

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly discuss the primary sources of energy.	CO1	7 Marks
	b)	Discuss the terms: i) Conventional energy source. ii) Non-conventional energy source. iii) Renewable energy source.	CO1	7 Marks
		(OR)		
2	a)	Define: i) Altitude angle ii) Incident angle iii) Zenith angle	CO1	6 Marks
	b)	Calculate the angle made by a beam radiation with the normal to a flat collector on December 1, at 9:00 A.M., solar for a location at $28^0 35'$ N. The collector is tilted at an angle of latitude plus10^0, with the horizontal and is pointing due south.	CO3	8 Marks

UNIT-II

3	a)	Mention the main components of a flat-plate collector, explain the function of each.	CO1	8 Marks
	b)	List the parameters affecting the performance of flat-plate collectors and explain in detail.	CO2	6 Marks
		(OR)		
4	a)	Explain the principle of conversion of solar energy into heat.	CO1	4 Marks
	b)	Enumerate the different types of concentrating type collectors. Describe a collector used in power plant for generation of electrical energy.	CO2	10 Marks

UNIT-III

5	a)	With the help of neat sketch, describe a solar heating system using water heating solar collectors. Give the advantages and disadvantages of this method.	CO2	8 Marks
	b)	Give the main applications of solar pond. Describe briefly.	CO3	6 Marks
		(OR)		
6	a)	Describe the principle of working and constructional details of a basic thermionic generator.	CO3	7 Marks
	b)	Describe the principle of working of a fuel cell with reference to H_2-O_2 cell.	CO1	7 Marks

UNIT-IV

7	a)	Discuss the advantages and disadvantages of horizontal and vertical axis wind mill.	CO3	7 Marks
	b)	Describe the main applications of wind energy with neat sketches.	CO3	7 Marks
		(OR)		
8	a)	Explain the process of photosynthesis. What are the conditions and which are necessary for it?	CO3	8 Marks
	b)	Classify the gasifiers and explain in detail.	CO3	6 Marks

UNIT-V

9	a)	Write a short note on vapour-dominated geothermal power plant.	CO1	7 Marks
	b)	Describe the closed cycle OTEC system with its advantages over open cycle system.	CO3	7 Marks
		(OR)		
10	a)	Discuss the different tidal power schemes and configurations.	CO3	7 Marks
	b)	State the advantages and limitations of wave energy conversion.	CO1	7 Marks

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CODE No.: 14BT80401 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

CELLULAR AND MOBILE COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the mobile radio transmission mediums.	CO1	7 Marks
	b)	Why is cell splitting required and explain its types?	CO1	7 Marks
		(OR)		
2	a)	Explain a basic cellular system with a neat diagram.	CO1	7 Marks
	b)	As design engineer, what are the steps required for planning cellular system.	CO3	7 Marks

UNIT-II

3	a)	Mention the steps required for obtaining a point to point model.	CO1	7 Marks
	b)	Obtain the point to point prediction model.	CO1	7 Marks
		(OR)		
4	a)	Explain the propagation mechanism over water.	CO1	7 Marks
	b)	Explain the basic characteristics of a basic antenna structure.	CO1	7 Marks

UNIT-III

5	a)	How are channels assigned to a travelling mobile user?	CO2	7 Marks
	b)	Explain sectoring principle with neat diagrams.	CO2	7 Marks
		(OR)		
6	a)	Determine the probability of requirement of a Handoff.	CO1	7 Marks
	b)	Explain the process of assigning a channel to an user and traffic in a cell.	CO1	7 Marks

UNIT-IV

7	a)	Explain the operation of OFDM Transmitter.	CO1	7 Marks
	b)	Show, for the same sequence as in (a), how OQPSK differs from QPSK. What is it about this result that makes OQPSK preferable to QPSK for mobile communication?	CO4	7 Marks
		(OR)		
8	a)	Compare QPSK and MSK modulation techniques.	CO2	7 Marks
	b)	Explain QPSK signal constellation.	CO1	7 Marks

UNIT-V

9	a)	Derive the probability for bit error cases.	CO3	7 Marks
	b)	How is voice signal processed and coded in cellular systems?	CO1	7 Marks
		(OR)		
10	a)	Explain the operation of IS 95.	CO1	7 Marks
	b)	Elaborate handoff, location and paging procedures in mobile communications.	CO3	7 Marks

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CODE No.: 14BT80402 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

MIXED SIGNAL DESIGN

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1	a)	Discuss in detail, the effect of noise in switched-capacitor circuits.	CO1	7 Marks
	b)	Find the capacitance values needed for a first-order switched-capacitor circuit such that its 3dB point is at 10kHz when a clock frequency of 100kHz is used. It is also desired that the filter have zero gain at 50kHz and the **dc** gain be unity.	CO3	7 Marks
		(OR)		
2	a)	Explain about low-Q Biquad filter.	CO1	7 Marks
	b)	Discuss in detail, the operation of fully differential first-order switched-capacitor filter.	CO1	7 Marks
		UNIT-II		
3	a)	Explain the basic principle and operation of phase locked loops.	CO1	7 Marks
	b)	Describe in detail about voltage controlled oscillator.	CO1	7 Marks
		(OR)		
4	a)	Explain how higher Q factor results in better tracking behavior in second order PLL.	CO2	7 Marks
	b)	Compare and contrast phase detector and phase frequency detector. Explain the working of phase frequency detector.	CO2	7 Marks
		UNIT-III		
5	a)	Discuss in detail the performance limitations of data converters.	CO1	7 Marks
	b)	An input signal arrives at a quantizer already corrupted with some noise and having a SNR of 35dB. How many bits of resolution does the quantizer require to ensure that the quantization noise is at least 3dB smaller than the input noise?	CO3	7 Marks
		(OR)		
6	a)	Describe in detail the working of thermometer-code current-mode D/A converters.	CO2	7 Marks
	b)	Illustrate the segmented D/A hybrid converter.	CO1	7 Marks
		UNIT-IV		
7	a)	Discuss about error correction in Successive Approximation converters.	CO1	7 Marks
	b)	Explain how offset correction in comparators is performed in 1.5 Bit per stage pipelined converter.	CO2	7 Marks
		(OR)		
8	a)	Discuss in detail, the design issues that should be addressed when building high-speed flash A/D converters.	CO2	7 Marks
	b)	Describe the construction and operation of folding A/D converters.	CO1	7 Marks
		UNIT-V		
9	a)	Explain MASH architecture for realizing higher order modulators.	CO2	7 Marks
	b)	Discuss atleast three practical considerations in designing modulators.	CO2	7 Marks
		(OR)		
10	a)	Contrast the effect of with and without noise shaping on oversampling.	CO2	7 Marks
	b)	Summarize decimating filters and interpolating filters.	CO2	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

SATELLITE COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State and explain Kepler's laws of planetary motion. How can Kepler's law of planetary motion be applied to the case of geo stationary satellite?	CO2	7 Marks
	b)	What do you mean by Perigee and Apogee? Derive an expression for the velocity of a satellite at its perigee and apogee in terms of semi-major axis and eccentricity of earth.	CO2	7 Marks
		(OR)		
2	a)	Discuss Orbital effects in communication system performance.	CO1	7 Marks
	b)	An earth station situated in the Docklands of London, England needs to calculate the look angle to a geostationary satellite in the Indian Ocean operated by Intelsat. The details of the earth station site and the satellite are as follows: Earth station latitude and longitude are 52.0º N and 0º Satellite longitude (subsatellite point) is 66.0º E.	CO3	7 Marks

UNIT-II

3	a)	Describe the design procedure for uplink of Satellite Communication system with a neat sketch.	CO3	8 Marks
	b)	List out and explain basic antenna types used in Satellite Spacecrafts.	CO1	6 Marks
		(OR)		
4	a)	Explain Telemetry, Tracking, Command and Monitoring in detail.	CO1	7 Marks
	b)	Define and explain G/T Ratio, System Noise Temperature and Space Qualification.	CO1	7 Marks

UNIT-III

5	a)	Discuss briefly about TDMA and CDMA.	CO1	7 Marks
	b)	Explain Direct Sequence Spread Spectrum Communication system with the help of block diagram.	CO2	7 Marks
		(OR)		
6	a)	What is the importance of multiple processing with On- Board processing and brief on Satellite switched TDMA.	CO1	7 Marks
	b)	Give the process of calculating the overall Carrier – to – Noise on an FDMA link.	CO3	7 Marks

UNIT-IV

7	a)	Discuss Orbit considerations for different types of orbits.	CO1	7 Marks
	b)	Explain Satellite System considerations.	CO1	7 Marks
		(OR)		
8	a)	Summarize the advantages and disadvantages of low, medium and geographical earth orbits.	CO1	6 Marks
	b)	Compare the various NGSO constellation designs used in satellite communications.	CO2	8 Marks

UNIT-V

9	a)	Explain GPS position location principles and their operation in satellite navigation.	CO1	7 Marks
	b)	Describe the process of GPS receiver operation.	CO1	7 Marks
		(OR)		
10	a)	Discuss about the following: i) GPS Navigation Message. ii) GPS Signal Levels.	CO1	7 Marks
	b)	Explain GPS receivers and Codes with suitable sketches.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

LOW POWER CMOS VLSI DESIGN

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State Moore's law and explain the significance of low power VLSI chips in present technology.	CO1	7 Marks
	b)	Elucidate the different types of power dissipation in CMOS circuits.	CO2	7 Marks
		(OR)		
2	a)	Discuss about the major sources of leakage current.	CO2	7 Marks
	b)	Write about the basic principles of low power design.	CO1	7 Marks

UNIT-II

3	a)	Explain the importance of Spice circuit simulation and analyze the discrete transistor modeling.	CO2	6 Marks
	b)	What are the basic building blocks at the architecture level abstraction and analyze about data correlation in DSP systems.	CO2	8 Marks
		(OR)		
4	a)	Show that how a switching frequency is a important characteristic in digital signal analysis.	CO3	5 Marks
	b)	With an example, estimate the power estimation of combinational logic using entropy analysis.	CO3	9 Marks

UNIT-III

5	a)	Discuss various versions of transistor re-ordering techniques with an example.	CO3	7 Marks
	b)	Write the differences between single edge triggered flip-flop and double edge triggered flip-flop.	CO2	7 Marks
		(OR)		
6	a)	Give the details of state machine encoding with a suitable example.	CO2	7 Marks
	b)	What is the significance of pre-computation logic and explain about Binary comparator function.	CO3	7 Marks

UNIT-IV

7	a)	Write short notes on frequency division and multiplication power reduction technique.	CO1	7 Marks
	b)	List out and explain the different power reduction techniques in clock networks.	CO2	7 Marks
		(OR)		
8	a)	Frame the different techniques for reducing power dissipation of a bus.	CO2	7 Marks
	b)	Describe the architecture of SRAM and mention various low power techniques for SRAM.	CO1	7 Marks

UNIT-V

9	a)	Illustrate the power and performance management of low power techniques of a system.	CO2	7 Marks
	b)	How to reduce switching activities by using Guarded evaluation technique.	CO2	7 Marks
		(OR)		
10	a)	Elucidate how the power efficiency takes place in a pipelined system.	CO2	7 Marks
	b)	With an example, illustrate the operator transformation on a control data flow graph.	CO2	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

DESIGN PATTERNS

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Distinguish between Object- Oriented software and Design pattern.	CO2	7 Marks
	b)	Describe Design pattern implementations with an example. How it supports the development of applications?	CO2 CO5	7 Marks
		(OR)		
2	a)	Discuss in detail how to use a Design pattern.	CO2	7 Marks
	b)	Explain how MVC is used as a consistent design pattern.	CO2	7 Marks

UNIT-II

3	a)	How to implement Builder class? Explain with an example.	CO2	7 Marks
	b)	What is the motivation for Factory Method? Explain it in detail.	CO1	7 Marks
		(OR)		
4	a)	Explain Singleton design pattern with the help of a sample code.	CO2	7 Marks
	b)	How to construct a particular physical structure, one that corresponds to a properly formatted document? Explain.	CO2	7 Marks

UNIT-III

5	a)	What is the motivation for the Adapter? Explain in detail.	CO2	7 Marks
	b)	Mention the consequences and implementation issues of the Structural patterns.	CO3	7 Marks
		(OR)		
6	a)	What is the purpose of Decorator design pattern? Illustrate with an example.	CO2	5 Marks
	b)	What is Flyweight design pattern? Explain with a suitable example.	CO2	9 Marks

UNIT-IV

7	a)	List and explain the implementation issues of Command pattern.	CO4	7 Marks
	b)	How to avoid coupling the sender of request to its receiver? Explain it in detail.	CO3	7 Marks
		(OR)		
8	a)	Discuss in detail about the applicability of a Mediator pattern.	CO4	7 Marks
	b)	Explain the collaborations and consequences of Iterator pattern.	CO2	7 Marks

UNIT-V

9	a)	Write short notes on designing a Document editor.	CO1	7 Marks
	b)	Briefly explain about embellishing the User Interface.	CO3	7 Marks
		(OR)		
10	a)	Differentiate between Implementation diagrams and State diagrams with an example.	CO2	7 Marks
	b)	What factors are to be considered in supporting Multiple Window Systems? Explain about Hyphenation.	CO4	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

BIG DATA

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain Sampling and types of Data Elements in Big Data.	CO1	7 Marks
	b)	Explain Categorization of Data with examples.	CO2	7 Marks
		(OR)		
2	a)	Explain Standardizing of Data.	CO1	7 Marks
	b)	Explain Outlier Detection and Treatment in Big Data.	CO1	7 Marks

UNIT-II

3	a)	Illustrate the Eco-System of Hadoop with neat sketch.	CO2	7 Marks
	b)	Explain design considerations of HDFS.	CO1	7 Marks
		(OR)		
4	a)	Explain usage of Job Tracker and Task Tracker in Hadoop.	CO1	7 Marks
	b)	Differentiate the working of Name Node and Secondary Name Node.	CO2	7 Marks

UNIT-III

5		Explain YARN features architecture with neat sketch.	CO2	14 Marks
		(OR)		
6	a)	Explain Job scheduling in Map Reduce.	CO1	7 Marks
	b)	Explain Input and Output format of Map Reduce.	CO1	7 Marks

UNIT-IV

7	a)	Compare HIVE with traditional Data Bases.	CO2	7 Marks
	b)	Explain HIVE shell and Services.	CO1	7 Marks
		(OR)		
8	a)	Discuss Querying of data in HIVE with examples.	CO2	7 Marks
	b)	Explain PIG Latin features.	CO1	7 Marks

UNIT-V

9	a)	Briefly discuss Mahout and Sqoop functionalities.	CO1	7 Marks
	b)	Explain Link Inversion in Nutch.	CO1	7 Marks
		(OR)		
10		Explain Log processing at Rack space with neat sketch	CO2	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

NETWORK MANAGEMENT

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	With a neat sketch, explain about Telephone Network Model.	CO1	8 Marks
	b)	Draw and explain OSI Communication Architecture.	CO1	6 Marks
		(OR)		
2	a)	Discuss in detail about Network Management functions.	CO1	8 Marks
	b)	Draw and explain Network Management Dumbbell Architecture.	CO1	6 Marks

UNIT-II

3	a)	Categorize various Network Management Standards.	CO2	8 Marks
	b)	Explain the Two-Tier and Three-Tier Network Management organization model.	CO2	6 Marks
		(OR)		
4	a)	List various data types available in ASN.1. Explain them.	CO1	6 Marks
	b)	Explain about Information model.	CO1	8 Marks

UNIT-III

5		Discuss in detail about SNMP Communication model.	CO2	14 Marks
		(OR)		
6	a)	Explain about SNMPV2 Management Information base.	CO1	8 Marks
	b)	Discuss the SNMPV2 Protocol operations.	CO1	6 Marks

UNIT-IV

7	a)	What is Remote Monitoring? Explain the Network Configuration of RMON with a neat diagram.	CO2	8 Marks
	b)	Explain about RMON1.	CO1	6 Marks
		(OR)		
8	a)	Write about the applications of SNMPV3.	CO2	7 Marks
	b)	Explain about the SNMPV3 user based security model.	CO2	7 Marks

UNIT-V

9		Draw and explain the different types of TMN Architectures.	CO1	14 Marks
		(OR)		
10	a)	Write the limitations of SNMP Management.	CO2	6 Marks
	b)	Explain about Web-based Enterprise Management.	CO1	8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

AD-HOC AND WIRELESS SENSOR NETWORKS

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	With a neat sketch, explain wireless mesh networks.	CO2	7 Marks
	b)	Describe the major issues in designing a MAC protocol.	CO2	7 Marks
		(OR)		
2	a)	Write about the distributed priority scheduling scheme.	CO1	7 Marks
	b)	With a neat sketch, explain the receiver-initiated busy tone multiple access protocol.	CO2	7 Marks

UNIT-II

3	a)	Write the characteristics of routing protocol for ad-hoc wireless network.	CO1	7 Marks
	b)	With an example, explain ad-hoc On Demand Distance Vector routing protocol.	CO2	7 Marks
		(OR)		
4		What is a tree-based multicast routing protocol? Explain bandwidth-efficient multicast routing protocol.	CO1	14 Marks

UNIT-III

5	a)	Write in detail about power-aware routing metrics.	CO1	7 Marks
	b)	Explain how explicit link failure notification improve TCP performance in ad-hoc network.	CO2	7 Marks
		(OR)		
6		Why does TCP not perform well in ad-hoc wireless network?	CO2	14 Marks

UNIT-IV

7	a)	With an example, explain the QoS routing in ad-hoc wireless network.	CO2	7 Marks
	b)	Discuss the design choices for providing QoS support in ad-hoc network.	CO2	7 Marks
		(OR)		
8		Describe the globalized power-aware routing techniques.	CO3	14 Marks

UNIT-V

9	a)	With a neat sketch, explain the layered architecture of wireless sensor network.	CO1	7 Marks
	b)	Explain the cost-field approach for data dissemination in sensor network.	CO1	7 Marks
		(OR)		
10	a)	Discuss about the power-efficient gathering for sensor information systems.	CO1	7 Marks
	b)	Write the parameters to measure QoS of sensor network.	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

FIBER OPTICS AND LASER INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define dispersion in an optical fiber. Illustrate its affect on the communication link.	CO1	8 Marks
	b)	A 15km optical fiber link uses fiber with a loss of 1.5dB/km. The fiber is jointed every km with connectors which give an attenuation of 0.8dB each. Evaluate the minimum mean optical power which must be launched into the fiber in order to maintain a mean optical power level of 0.3μw at the detector.	CO2	6 Marks
		(OR)		
2	a)	Illustrate the operation of DHLED with neat diagram.	CO1	8 Marks
	b)	A P-I-N photodiode, on an average, generates one electron-hole pair per two incident photons at a wavelength of 0.85μm. Assuming all the photo-generated electrons are collected, calculate; i) the quantum efficiency of the diode; ii) the maximum possible band gap energy (in eV) of the semiconductor, assuming the incident wavelength to be a long wavelength cut-off; iii) the mean output photocurrent when the incident optical power is 10μW.	CO2	6 Marks

UNIT-II

3	a)	With a neat diagram, explain the principle and operation of Fabry-Perot interferometric fiber optic sensor used for temperature and pressure measurements.	CO1	7 Marks
	b)	List the major uses of fiber optic liquid level sensors. Discuss the operation of fluorescence liquid level sensor used for continuous level measurement with neat diagram.	CO1	7 Marks
		(OR)		
4	a)	Describe the working of Moire-Fringes modulation fiber optic sensor.	CO1	6 Marks
	b)	Derive the relationship between angular velocity and phase shift in fiber optic Gyro. Also explain the operation of closed loop fiber optic Gyro with a neat diagram.	CO1	8 Marks

UNIT-III

5	a)	Explain the operation of 3-level and 4-level lasers with energy band diagrams.	CO1	6 Marks
	b)	Compare the features of solid state, Gas, liquid and semi conductor lasers.	CO1	8 Marks
		(OR)		
6	a)	Explain the different techniques used for Q-switching.	CO1	8 Marks
	b)	Briefly explain about laser modes.	CO1	6 Marks

UNIT-IV

7	a)	Briefly discuss the role of laser in: (i) material processing (ii) Welding	CO1	8 Marks
	b)	Illustrate the operation of laser Doppler velocity meter.	CO1	6 Marks
		(OR)		
8	a)	With a neat diagram, explain about lasers in tissue interaction.	CO1	8 Marks
	b)	Write a short notes on how lasers are used in Endoscopy.	CO1	6 Marks

UNIT-V

9	a)	Define holography. With neat sketches, explain holography recording and reconstruction processes. Also mention the applications of holography.	CO1	8 Marks
	b)	Explain the terms coherence requirements and resolution in connection with hologram.	CO1	6 Marks

(OR)

10	a)	What is the necessity of modulators in fiber optic communication system? With a neat diagram, explain the operation of Magneto optic modulator.	CO1	8 Marks
	b)	Write a short note on holographic screen.	CO1	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

POWER PLANT INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Compare a geothermal power plant with a conventional steam power plant.	CO1	7 Marks
	b)	With help of neat sketches explain co-generation.	CO2	7 Marks
		(OR)		
2	a)	Write a short note on conventional and non-conventional source of energy.	CO1	7 Marks
	b)	Briefly discuss the objectives of instrumentation and control.	CO1	7 Marks

UNIT-II

3	a)	What is boiler water circulation? Give the difference between natural circulation and forced circulation.	CO1	7 Marks
	b)	Explain drum level control with neat sketches.	CO2	7 Marks
		(OR)		
4	a)	With the help of neat sketches, explain the working of piston type of pressure gauge.	CO2	7 Marks
	b)	Briefly discuss the types of fuels used in a thermal power plant.	CO1	7 Marks

UNIT-III

5		Identify suitable control scheme for steam temperature control and fire side steam temperature control with relevant sketches.	CO2	14 Marks
		(OR)		
6	a)	Explain the operation of i) Smoke monitor. ii) Dust monitor.	CO1	12 Marks
	b)	4 coil conveyor system moves at a speed of 450m/min. A weighing plat form is 15m in length and a particular weighing shows a reading of 200kg. Find the coil delivery in kg/hr.	CO3	2 Marks

UNIT-IV

7	a)	Enumerate the essential steam turbine parameters that should be monitored and controlled.	CO1	7 Marks
	b)	Explain in detail the monitoring and control of turbine speed.	CO1	7 Marks
		(OR)		
8	a)	Draw the control schematics for the control of pressure, fuel and tank level in lobe oil system.	CO1	7 Marks
	b)	Explain the different cooling methods for an electric generator. Why hydrogen cooling is preferred others for large generators?	CO1	7 Marks

UNIT-V

9		Write a short notes on: i) Maintenance costs. ii) Life cycle costs. iii) Maintenance manuals.	CO1	14 Marks
		(OR)		
10		Write short notes on: i) Safety interlocks in boiler. ii) Start up and shutdown interlocks in boilers.	CO1	14 Marks

CODE No.:14BT81004 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

AIRCRAFT INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the primary control surfaces in an air craft with a diagram.	CO1	7 Marks
	b)	Write a short note on display colour and marking.	CO1	7 Marks
		(OR)		
2	a)	Describe two of the methods adopted for the display of indications related to high range measurements.	CO1	10 Marks
	b)	What types of display would you associate with the following instruments: i) Synchroscope. ii) Altimeter. iii) Gyro horizon.	CO1	4 Marks

UNIT-II

3		Draw a line diagram of a dual-pitot and static system for port and starboard instrument panels in an aircraft.	CO2	14 Marks
		(OR)		
4		Discuss about atmospheric variations with altitude.	CO1	14 Marks

UNIT-III

5	a)	What are the different types of gyroscope? Describe the principles as which they are based.	CO2	7 Marks
	b)	How does a gyro horizon work? Explain with a diagram and draw different flight altitude displays.	CO2	7 Marks
		(OR)		
6		Illustrate the construction and working of vibrating gyros in an aircraft.	CO3	14 Marks

UNIT-IV

7	a)	Explain the function of the test switch incorporated in fuel-quantity indicating systems.	CO1	7 Marks
	b)	What is an integrated flow meter system? Describe a method of achieving integration.	CO2	7 Marks
		(OR)		
8	a)	Describe the construction and explain the operation of the instrument used for measuring manifold pressure.	CO2	7 Marks
	b)	Explain briefly how the total fuel remaining may be indicated.	CO2	7 Marks

UNIT-V

9		Explain attitude director indicator with a neat sketches.	CO1	14 Marks
		(OR)		
10		Briefly discuss the Active matrix liquid crystal display units.	CO1	14 Marks

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CODE No.:14BT81006 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

INSTRUMENTATION IN PROCESS INDUSTRIES

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the four typical processes in the food industry.	CO1	7 Marks
	b)	Describe the steps in potato processing with a neat flow chart.	CO2	7 Marks
		(OR)		
2		Explain the Moisture analyzer and pH analyzer with respect to food processing industry.	CO1	14 Marks

UNIT-II

3	a)	Discuss the significance of Flow and Liquid level sensors in paper industry.	CO1	7 Marks
	b)	Discuss the factors for selecting control valves for paper mill applications.	CO1	7 Marks
		(OR)		
4		Describe the Computer Control Techniques used in paper industry (SPC, DDPC).	CO2	14 Marks

UNIT-III

5		Describe the sterilization techniques in pharmaceutical industry.	CO1	14 Marks
		(OR)		
6	a)	Describe the pneumatic bin–gate valve so as to bring out its functionality.	CO1	7 Marks
	b)	Explain the significance of Process analyzers in pharmaceutical industry.	CO1	7 Marks

UNIT-IV

7	a)	List and explain the stages involved in converting raw materials of iron ore, coal and limestone into usable steel.	CO2	7 Marks
	b)	Bring out the importance of blast furnaces in steel making industry	CO1	7 Marks
		(OR)		
8		Describe the types of sensors with unique or special applications in steel industry	CO1	14 Marks

UNIT-V

9		Elucidate the operation of Reactor Temperature Control with Re-circulation in Iron and Steel Industry	CO2	14 Marks
		(OR)		
10		Describe the process of Reactor Pressure Control by throttling flow of Vent gas.	CO2	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

CLOUD COMPUTING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe any three goals of Cloud Computing.	CO1	3 Marks
	b)	Define Cloud Computing and mention any two benefits.	CO1	4 Marks
	c)	What are the risks and challenges in Cloud Computing?	CO2	7 Marks
		(OR)		
2	a)	Explain in-detail about Cloud Delivery Models.	CO1	7 Marks
	b)	Tabulate the Cloud Deployment Models.	CO2	7 Marks

UNIT-II

3	a)	Distinguish between Data Center and Virtualization technologies.	CO2	7 Marks
	b)	Explain the Multitenant and Service Technologies.	CO1	7 Marks
		(OR)		
4	a)	Describe Redundant Storage and Elastic Disk Provisioning Architectures.	CO1	7 Marks
	b)	Write about Dynamic Scalability Architecture.	CO1	4 Marks
	c)	Explain the Workload Distribution Architecture.	CO1	3 Marks

UNIT-III

5	a)	Write the benefits of Rapid Provisioning architecture.	CO1	7 Marks
	b)	Describe the Non-Disruptive Service Relocation Architecture.	CO1	7 Marks
		(OR)		
6	a)	Explain the Functioning of Direct LUN Access Architecture.	CO1	7 Marks
	b)	What are the benefits of Elastic Network Capacity Architecture?	CO1	7 Marks

UNIT-IV

7		Explain in details about the Cloud Delivery Model considerations.	CO2	14 Marks
		(OR)		
8	a)	Write about the Business Cost Metrics.	CO1	7 Marks
	b)	Explain the Cloud Usage Cost Metrics.	CO1	7 Marks

UNIT-V

9	a)	What are the necessity situations of Virtualization?	CO1	7 Marks
	b)	Describe the objectives of Virtualization.	CO1	7 Marks
		(OR)		
10	a)	What is Microsoft Hyper-V? How to configure it in Windows?	CO1	7 Marks
	b)	Explain some tools to create the virtualization in Ubuntu.	CO1	7 Marks

CODE No.:14BT81202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

CRYPTOGRAPHY AND NETWORK SECURITY

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	A generalization of the Caesar cipher, known as the affine Caesar cipher, has the following form: For each plaintext letter, substitute the cipher text letter: **C = E([a, b], p) = (ap + b) mod 26**. Encrypt plaintext **CRYPTOGRAPY AND NETWORK SECURITY** using affine cipher. Take a = 3; b = 2.	CO3	7 Marks
	b)	Explain any one Transposition technique with suitable example.	CO2	7 Marks
		(OR)		
2	a)	Discuss about various security services.	CO1	7 Marks
	b)	Prove the relationship between security mechanisms and attacks in terms of a matrix.	CO2	7 Marks

UNIT-II

3	a)	Illustrate the functions used in AES Encryption algorithm with neat diagram.	CO2	7 Marks
	b)	Analyze Brute force attack is applied on DES and AES ciphers. Compare with Crypt analysis with respect to DES and AES.	CO2	7 Marks
		(OR)		
4	a)	Justify why decryption function is used for both encryption and decryption process in CFB, OFB and CTR block modes of operation.	CO2	7 Marks
	b)	Apply RSA algorithm to perform encryption and decryption for the following: $p = 3; q = 11, e = 7; M = 5$.	CO3	7 Marks

UNIT-III

5	a)	Outline Hash function based on Cipher Block Chaining mode.	CO1	7 Marks
	b)	Outline basic uses of Message Encryption of MAC.	CO1	7 Marks
		(OR)		
6	a)	List the properties of Digital Signature.	CO1	7 Marks
	b)	Illustrate X.509 public-key certificates with neat diagram.	CO2	7 Marks

UNIT-IV

7	a)	Demonstrate PGP Cryptographic functions with neat diagrams.	CO2	7 Marks
	b)	Discuss about S/MIME in detail.	CO1	7 Marks
		(OR)		
8	a)	List IPSec documents.	CO1	7 Marks
	b)	Summarize the operation of Transport and Tunnel modes of AH and ESP.	CO2	7 Marks

UNIT-V

9	a)	What are typical phases of operation of a virus or worm? Explain.	CO2	7 Marks
	b)	What is the role of encryption in the operation of a virus? Explain.	CO2	7 Marks
		(OR)		
10	a)	Illustrate Transport and Tunnel modes for IPV4 and IPV6 packets of ESP with neat diagrams.	CO2	7 Marks
	b)	What is the difference between statistical anomaly detection and rule-based intrusion detection?	CO2	7 Marks

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CODE No.:14BT81202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

CRYPTOGRAPHY AND NETWORK SECURITY

[Electronics and Communication Engineering, Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List and explain X.800 Security Services.	CO1	7 Marks
	b)	With a neat sketch explain model for network security.	CO1	7 Marks
		(OR)		
2	a)	With an example explain monoalphabetic cipher. Describe how statistical properties of letters in English are used for breaking the cipher.	CO2	6 Marks
	b)	List and describe the transposition techniques. Encrypt the message "Secret code is nothing" using these techniques.	CO2	8 Marks

UNIT-II

3	a)	Draw the classical fiestel cipher network. Describe the design features and parameters of a fiestel network.	CO1	7 Marks
	b)	Explain the block cipher design principles.	CO1	7 Marks
		(OR)		
4	a)	Describe the principles of public key crypto systems.	CO1	6 Marks
	b)	Explain the Diffie-Hellman algorithm. Describe how this algorithm is insecure against man-in-the-middle attack.	CO2	8 Marks

UNIT-III

5	a)	Draw and explain HMAC structure.	CO1	7 Marks
	b)	Differentiate direct and arbitrated digital signatures.	CO1	7 Marks
		(OR)		
6	a)	Write and explain the summary of Kerberos Version 4 message exchanges.	CO1	7 Marks
	b)	Discuss the differences between Kerberos Version 4 and Version 5.	CO1	7 Marks

UNIT-IV

7	a)	Draw the general format of PGP messages. Explain each field.	CO1	6 Marks
	b)	Describe the process of message generation and message reception of PGP.	CO1	8 Marks
		(OR)		
8	a)	Differentiate between IPSec transport and tunnel modes.	CO1	6 Marks
	b)	Draw the IPSec AH and ESP formats.	CO1	8 Marks

UNIT-V

9	a)	Define Intruder. List and explain various intrusion detection techniques.	CO2	9 Marks
	b)	Describe how password is protected in UNIX.	CO1	5 Marks
		(OR)		
10	a)	Explain the working of packet filer router and application level gateway.	CO1	6 Marks
	b)	Give brief overview of Trusted Systems.	CO1	8 Marks

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CODE No.:14BT81203 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

.NET TECHNOLOGIES

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the key improvements in .NET platform.	CO1	7 Marks
	b)	Illustrate built-in types in Common Type System.	CO1	7 Marks
		(OR)		
2	a)	Discuss iteration constructs with syntax and examples.	CO2	7 Marks
	b)	What is Namespace? Discuss classes of System**.**Collections namespace.	CO1	7 Marks

UNIT-II

3	a)	Explain the role of this Keyword and Static Keyword with example.	CO1	7 Marks
	b)	Explain abstract class and function overriding with example.	CO2	7 Marks
		(OR)		
4	a)	Describe **C#** polymorphism with example.	CO3	8 Marks
	b)	Discuss system level exceptions in detail.	CO2	6 Marks

UNIT-III

5	a)	What is method overloading? Explain it in brief with example using **C#**.	CO3	7 Marks
	b)	Define Interface and explain types of interfaces.	CO3	7 Marks
		(OR)		
6		Write an example to create custom generic structures and classes using **C#**.	CO3	14 Marks

UNIT-IV

7	a)	Draw and explain ADO**.**Net architecture.	CO2	7 Marks
	b)	Write an **C#** example to bind DataTable objects to windows forms GULs.	CO1	7 Marks
		(OR)		
8		Illustrate the way of accessing data from database using ADO**.**NET in **C#**.	CO3	14 Marks

UNIT-V

9	a)	Differentiate Boxing and Unboxing with example.	CO3	7 Marks
	b)	Discuss the life cycle methods of ASP**.**NET.	CO1	7 Marks
		(OR)		
10	a)	Discuss different modes of Session state to preserve the state information in ASP**.**NET.	CO2	7 Marks
	b)	What are Cookies and when they are used? Explain the objects and methods used create, add and retrieve the cookies.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

INFORMATION RETRIEVAL SYSTEMS

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is the impact on precision and recall in the use of Stop lists and Stop algorithms?	CO2	5 Marks
	b)	What is an Information Retrieval System? Explain functional overview of Information Retrieval System	CO1	9 Marks
		(OR)		
2	a)	What is a Support Vector Machine (SVM)? How to use SVM in an Information Retrieval System.	CO2	7 Marks
	b)	What are the similarities and dissimilarities between uses of fuzzy searches and term masking?	CO2	7 Marks

UNIT-II

3	a)	What is a zoning? Discuss the zoning and creation of processing tokens.	CO1	8 Marks
	b)	Define the terms : i) Ingest. ii) Stemming. iii) Entity Resolution.	CO1	6 Marks
		(OR)		
4	a)	Write short notes on: i) Baysean Indexing. ii) Vector Weighting.	CO1	9 Marks
	b)	Is image search more difficult than audio search? Justify your answer.	CO3	5 Marks

UNIT-III

5	a)	Explain manual clustering with suitable example.	CO1	7 Marks
	b)	What is a hierarchical clustering? Discuss the hierarchical clustering objectives.	CO1	7 Marks
		(OR)		
6	a)	Is the use of positive feedback always better than using negative feedback to improve a query? Justify.	CO2	7 Marks
	b)	Distinguish between Multimedia Search and Text Search. Which one is more difficult? Justify your answer.	CO2	7 Marks

UNIT-IV

7	a)	What is information visualization? Discuss the different areas of information visualization and presentation.	CO1	7 Marks
	b)	Explain in detail aspects of the visualization process.	CO1	7 Marks
		(OR)		
8	a)	Explain multimedia item presentation.	CO1	7 Marks
	b)	Briefly discuss any two presentations of hits.	CO1	7 Marks

UNIT-V

9		Explain Boyer–Moore text searching algorithm. Use the Boyer–Moore algorithm to search for the term '*FANCY*' in the text string: *"FANCIFUL FANNY FRUIT FILLED MY FANCY*". Show all the steps and explain each of the required character shifts and also how many character comparisons are required to obtain a match.	CO3	14 Marks
		(OR)		
10	a)	What is a GFS? How to influence the ranking in GOOGLE scalable multiprocessor architecture.	CO2	7 Marks
	b)	Briefly discuss the Information Retrieval Systems (IRS) metrics with suitable examples.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

HIGH PERFORMANCE COMPUTING

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail about memory hierarchies in cache based microprocessor.	CO1	8 Marks
	b)	Describe various types of multicore processors.	CO1	6 Marks
		(OR)		
2	a)	List and explain the advanced techniques for improved application performance.	CO1	8 Marks
	b)	With an example, discuss the ways to support branches in vectorized loops.	CO1	6 Marks

UNIT-II

3		Briefly explain the following: i) Temporaries. ii) Loop kernel and Iterators. iii) Aliasing.	CO1	14 Marks
		(OR)		
4	a)	Write about the optimizations applied for Jacobi algorithm.	CO1	9 Marks
	b)	Describe the dynamic memory management in C++ optimization.	CO1	5 Marks

UNIT-III

5	a)	With a neat sketch, explain the distributed-memory parallel computer.	CO1	7 Marks
	b)	Discuss in detail about mesh networks.	CO1	7 Marks
		(OR)		
6	a)	Differentiate medium-grained and coarse-grained data parallelism.	CO2	7 Marks
	b)	Write short notes on the following. i) Scalability laws ii) Parallel efficiency	CO1	7 Marks

UNIT-IV

7		Explain the following OpenMP directives. i) CRITICAL. ii) REDUCTION. iii) TASK.	CO3	14 Marks
		(OR)		
8	a)	With an example explain the OpenMP overhead for short loops.	CO3	7 Marks
	b)	Write the OpenMP implementation for CRS and JDS matrix vector multiplication.	CO3	7 Marks

UNIT-V

9	a)	Describe about the collective communication in MPI programming.	CO1	7 Marks
	b)	Explain the following MPI functions i) MPI_ISend & MPI_IRecv ii) MPI_Test & MPI_Wait iii) MPI_Cart_Create & MPI_cart_Coords	CO1	7 Marks
		(OR)		
10	a)	With a neat sketch, explain intranode point-to-point communication.	CO2	7 Marks
	b)	Explain the ways to avoid implicit serialization and contention in MPI programming.	CO3	7 Marks

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CODE No.:14BT81503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech II Semester (SVEC-14) Regular Examinations April - 2018

HUMAN COMPUTER INTERACTION

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the brief history of screen design.	CO1	7 Marks
	b)	Discuss in detail the importance of the user interface for success of software.	CO1	7 Marks
		(OR)		
2	a)	Compare and contrast the graphical user interface and the web user interface.	CO2	7 Marks
	b)	What is graphical systems? Explain its advantages and disadvantages.	CO1	7 Marks

UNIT-II

3	a)	Explain the psychological characteristics in the design of a system	CO1	7 Marks
	b)	Explain briefly about the important human characteristics in design of a system.	CO2	7 Marks
		(OR)		
4	a)	Compare and contrast direct and indirect methods of requirements analysis.	CO2	7 Marks
	b)	Discuss in detail human interaction speed.	CO1	7 Marks

UNIT-III

5	a)	Explain about organizing and ordering of screen elements.	CO1	7 Marks
	b)	What is the role of screen navigation and flow in good screen design? Explain in detail.	CO2	7 Marks
		(OR)		
6	a)	Explain the guidelines for displaying components on screen.	CO2	7 Marks
	b)	Discuss in detail information retrieval on web.	CO1	7 Marks

UNIT-IV

7	a)	What are the guidelines for selecting the proper device based control? Explain in detail.	CO2	7 Marks
	b)	What are the various components of a window? Discuss in detail.	CO1	7 Marks
		(OR)		
8	a)	What is an icon? What are the different kinds of icons? Explain in detail.	CO1	7 Marks
	b)	Explain the procedure for choosing colors in screen design.	CO2	7 Marks

UNIT-V

9	a)	Discuss various software tools for creating user interface.	CO1	7 Marks
	b)	What is the role of state charts in specification? Give an example of state chart.	CO2	7 Marks
		(OR)		
10	a)	Explain the importance of keyboards and function keys.	CO2	7 Marks
	b)	Write short note on speech recognition.	CO1	7 Marks

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CODE No.:10BT60405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations April - 2018

VLSI DESIGN

[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 processes involved in CMOS Fabrication? Illustrate the main steps in a typical n-Well process.
b) Draw the Capacitor structure in CMOS process and explain its design.

2. a) Derive the equation for I_{DS} of saturated region for NMOS transistor.
b) Explain Bi-CMOS inverter with schematic and fabrication process.

3. a) Draw and explain the VLSI Design flow.
b) What are design rules? Explain how these design rules are helpful for drawing layout.

4. a) Discuss about area capacitances of MOS layers and give area capacitance calculations with suitable examples.
b) Explain in detail about formal estimation of CMOS inverter delay.

5. Draw the circuit for Transmission -gate-based full adder with sum and carry delays of same value and explain its working.

6. a) Design 4:1 Mux in PAL CMOS device with the help of I/O Structure.
b) Explain in brief about different methods of implementation approaches in VLSI design.

7. a) With a neat sketch, explain in detail about the hardware simulation.
b) Discuss the hardware synthesis process.

8. Write short notes on
a) CMOS testing. b) Design strategies for test.

CODE No.:10BT61302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations April - 2018

ROBOTICS AND AUTOMATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. With the aid of the diagram, describe a flexible machining cell with some special example problem. Indicate two alternative layouts of the cell.

2. Discuss the following robotic joints with their notation and specific application.
   i) Prismatic joint.
   ii) Rotational joint.
   iii) Twisting joint.
   iv) Revolving joint.

3. a) Explain the different types of drivers in brief.
   b) Explain about Laser sensor.

4. a) Explain mechanical grippers with a neat diagram.
   b) Explain stepper motor control circuits in detail.

5. Develop inverse kinematic relationships for a SCARA manipulator.

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) Discuss the automated guided vehicle systems.
   b) Discuss the concept of FMS work stations.

8. What do you mean by edge detection? Describe a quantitative technique to find out the edge of an object.

CODE No.:10BT70502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations April - 2018

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) What is meant by Data-flow testing? Discuss its significance.
b) What are the transaction flows? Discuss their complications.

4. a) Explain path testing, statement testing and branch testing criterion.
b) Write short notes on interior and boundary points.

5. a) Discuss the limitations of domain testing.
b) Write about Nice and Ugly domains.

6. Explain the rules for conversion of specifications into state graphs with suitable example.

7. a) Discuss about flow anomaly detection.
b) What are state graphs? Discuss about good and bad state graphs.

8. Explain about different types of check points in testing tool QTP.

CODE No.:10BT71202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations April – 2018

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) How is a Mobile Station Localized to a new Location?
b) Explain about Mobile Station base Transceiver signaling protocols.

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 ad hoc networks.
b) Explain the architecture of Bluetooth with a neat sketch.

4. a) Describe the four additional messages used by optimized mobile IP protocol.
b) What is Snooping TCP? Explain.

5. Explain about client-server architectures in mobile computing.

6. What is data dissemination? Explain selective tuning techniques.

7. a) Explain Dynamic Source Routing Protocol in MANET.
b) Explain about temporally ordered routing Algorithm in MANET.

8. a) Explain the following in WAP
i) Wireless transaction protocol
ii) Wireless session protocol
b) Explain the Mobile information device profile for mobile devices.

CODE No.:10BT80401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations April - 2018

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) Discuss about different noise levels in cellular frequency band.
b) Explain Operation of Cellular systems.

2. a) Obtain co-channel interference reduction factor and also for the desired C/I from normal case in an omni-directional antenna system.
b) Write short notes on cell splitting.

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) Explain sum and difference patterns and their synthesis.
b) Define channel assignment. Explain the concepts of sectorization and overlaid cells.

5. a) The gain of a dipole antenna is 9dB. What is the 3dB beam width? If gain is changed to 11dB, how beam width is changed.
b) Explain the different antenna configurations used at cell site for coverage.

6. a) Explain space diversity antennas.
b) Discuss non-fixed channel assignment algorithms.

7. a) Explain sum and difference patterns and their synthesis.
b) Explain non fixed channel assignment.

8. With neat sketch, explain the GSM architecture.

CODE No.:10BT81001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations April - 2018

INDUSTRIAL ELECTRONICS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operation of darlington emitter follower as DC amplifier with help of circuit diagram.
b) What are the principal applications of DC amplifier? Explain them briefly.

2. a) Describe the methodology of implementing over current protection in shunt voltage regulator.
b) List the differences between shunt and series voltage regulator.

3. a) Explain the need of commutation in thyristor circuits.
b) Distinguish between natural commutation and forced commutation.

4. a) What is meant by commutation of an inverter?
b) What are the typical uses and requirements of a practical inverter?

5. Draw V-I characteristics of the following and explain its principle of working.
i) DIAC ii) TRIAC

6. a) With neat diagram, explain in detail about Numerical Control System.
b) Explain in detail about adaptive control system with proper block diagram.

7. a) With neat diagrams, explain any one of the timer which is classified according to the techniques used to achieve the industrial timing.
b) Explain about the timers using R-C elements.

8. a) Describe the various applications of dielectric heating in detail.
b) Draw the circuit and briefly describe the working of high frequency power source for induction heating.

CODE No.:10BT70502 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2018

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. a) Explain, how the control flow graphs differ from flow charts.
b) Explain about multi entry and multi exit routines and fundamental path selection criteria.

3. What are transaction flow testing techniques? Explain them in detail.

4. a) Write about testing of one dimensional and two dimensional domain.
b) Write about interface range/domain compatibility testing.

5. a) Discuss the limitations of domain testing.
b) Write about Nice and Ugly domains.

6. Explain about KV charts and decision tables with suitable examples. Discuss their applications.

7. Explain state bug and transition bug in detail.

8. a) Write the test script generated by QTP to test the operation.
b) Explain the steps in recording a test case using QTP.

CODE No.:14BT5HS02 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

MANAGEMENT SCIENCE

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Summarise the contributions of Frederick Winslow Taylor and Henri Fayol to the management.	CO1	7 Marks
	b)	List various types of organizations and explain the merits and demerits.	CO1	7 Marks
		(OR)		
2	a)	Explain the various managerial skills required by a manager and describe managerial objectives.	CO5	7 Marks
	b)	Explain the benefits of SWOT analysis of an organization.	CO1	7 Marks

UNIT-II

3	a)	What is forecasting? Explain any two forecasting methods with examples.	CO4	7 Marks
	b)	Explain about different channels of distribution.	CO1	7 Marks
		(OR)		
4	a)	Define inventory. Discuss the different types of inventory.	CO2	7 Marks
	b)	Discuss about quality control using control charts with an example.	CO2	7 Marks

UNIT-III

5	a)	Describe the functions of Human Resource Management.	CO1	7 Marks
	b)	Explain Herzberg's two-factor theory.	CO1	7 Marks
		(OR)		
6	a)	What is merit rating? Explain it briefly.	CO1	7 Marks
	b)	Discuss the Maslow's theory of human needs with examples.	CO1	7 Marks

UNIT-IV

7	a)	Briefly write a note on PERT and its time estimates.	CO2	7 Marks
	b)	Enumerate the differences between PERT and CPM.	CO4	7 Marks
		(OR)		
8		The following are the activities associated with the event management of a New Year party. Identify critical path and suggest optimum duration of the project. Also work out optimum cost considering a daily overhead of Rs. 500/-.	CO2	14 Marks

Activities	Time in days		Cost in Rs	
	Normal	Crash	Normal	Crash
1-2	12	8	2,000	2,800
1-3	8	6	1,000	1,600
2-4	6	4	800	1,000
3-5	16	12	1,800	2,400
4-5	14	8	1,400	1,600

UNIT-V

9	a)	Discuss in detail about Total Quality Management (TQM).	CO3	7 Marks
	b)	What is Enterprise Resource Planning (ERP)? Explain it briefly.	CO5	7 Marks
		(OR)		
10	a)	Write short notes on Globalization.	CO5	7 Marks
	b)	Explain about Intellectual Property Rights (IPRs).	CO5	7 Marks

CODE No.:14BT40502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

DATABASE MANAGEMENT SYSTEMS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw and explain the detailed system architecture of DBMS.	CO1	8 Marks
	b)	Explain how the database system is different from conventional file system.	CO1	6 Marks
		(OR)		
2	a)	Mention and explain structural constraints.	CO1	6 Marks
	b)	Discuss in detail about various types of attributes used in E-R model and explain them with suitable examples.	CO1	8 Marks

UNIT-II

3		Discuss in detail about various integrity constraints used in relational system.	CO2	14 Marks
		(OR)		
4	a)	Explain how the relational algebraic expressions can be converted into SQL expressions with example for any four operations of relational algebra.	CO3	8 Marks
	b)	Define a view. Explain how SQL support views.	CO3	6 Marks

UNIT-III

5	a)	Give a detailed description about query processing and optimization.	CO3	7 Marks
	b)	Write short notes on the following: i) Order by clause and LIKE operator. ii) Set operators.	CO4	7 Marks
		(OR)		
6	a)	Differentiate functional dependency and multi valued dependency with example.	CO3	7 Marks
	b)	Explain 4NF and 5NF with an example.	CO1	7 Marks

UNIT-IV

7	a)	Describe the properties of a transaction. Discuss about transaction operations.	CO1	8 Marks
	b)	Explain the concept of testing for serializability.	CO1	6 Marks
		(OR)		
8	a)	Explain in detail about locking mechanism.	CO2	7 Marks
	b)	Write and explain deadlock handling algorithm.	CO3	7 Marks

UNIT-V

9		Explain about file organization and indexing in DBMS.	CO3	14 Marks
		(OR)		
10		By demonstrating with an example, explain Indexed Sequential Access Method (ISAM).	CO3	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

PRESTRESSED CONCRETE

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 A concrete beam of section 100mm wide by 300mm deep is prestressed by a cable carrying an initial prestressing force of 300kN at zero eccentricity at supports and eccentricity of 50mm at center of span. Span of the beam is 10m. The cross-sectional area of the wires in the cable is 300mm^2.

i) Calculate the percentage loss of stress in the cable only due to shrinkage of concrete using IS: 1343 recommendations assuming the beam to be pre-tensioned and post-tensioned. Assume Es = 210 kN/mm^2, Ec = 32 kN/mm^2 and age of concrete at transfer is 8 days. CO2 7 Marks

ii) Estimate the percentage loss of stress in the cable due to friction. Assume $\mu = 0.35$ and $k = 0.015$ per m, $\alpha = 4e/L$ CO2 7 Marks

(OR)

2 Explain about pre-tension and post-tension methods with neat diagrams. Also, write a note on Hoyer's Long line system of pre-tensioning. CO1 14 Marks

UNIT-II

3 A concrete beam of cross section 250 x 500mm spanning over 8m .The beam is prestressed by a straight cable with an eccentricity of 100mm from soffit and 5 number of 7mm diameter wires subjected to a stress of 1250N/mm^2. The live load on the beam is 2KN/m. Draw the stress distribution diagram at the central section for following. CO2 14 Marks

i) prestress + selfweigth ii) prestress + selfweigth + live load

Take the density of concrete as 24KN /m^3

(OR)

4 A prestressed concrete beam of section 180mm x 320mm is used over effective span of 6m to support a uniformly distributed load of 4.5KN/m in addition to self weight .The beam is prestressed by a parabolic cable carrying a force of 200KN located at an eccentricity of 50mm at center and zero at supports. Determine resultant stresses in the beam at quarter and central span sections. CO2 14 Marks

UNIT-III

5 A prestressed concrete beam of rectangular section 300mm wide by 600mm deep is prestressed by two post tensioned cables of area 600mm^2 each initially stressed to 1600 N/mm^2. The cables are located at a constant eccentricity of 100mm. The span of beam is 10m.

i) If f_{ck} = 40 N/mm^2, estimate the ultimate shear resistance of support section un-cracked in flexure (V_{co}). CO2 7 Marks

ii) If f_{ck} = 50 N/mm^2 and area of cables is 700mm^2 each, find the ultimate shear resistance of section un-cracked in flexure (V_{co}). CO2 7 Marks

(OR)

6	The support section of a prestressed concrete beam, 120mm wide and 250mm deep is required to support an ultimate shear force of 60KN. The compressive prestress at the centroidal axis is 5N/mm^2. The characteristic cube strength of concrete is 40N/mm^2. The cover to the tension reinforcement is 50mm. If the characteristic tensile strength of steel in stirrups is (f_y) 250N/mm^2, design suitable shear reinforcements at the section for uncracked case using IS: 1343 code specifications	CO3	14 Marks

UNIT-IV

7	The end block of a prestressed concrete beam, 100mm wide and 200mm deep, supports an eccentric prestressing force of 100KN, the line of action of which coincides with the bottom kern of the section. The depth of anchorage plate is 50mm. Using Guyon's method, estimate the magnitude and position of maximum tensile stress and bursting tension for the end block with concentric anchor force of 100KN.	CO2	14 Marks

(OR)

8	Write a short note on Guyon's method. Also explain the Guyon's method of computing bursting tension in the case of end blocks subjected to forces not evenly distributed with multiple anchorages. Draw the neat sketches.	CO1	14 Marks

UNIT-V

9	List the various factors that influence on deflection of a prestressed concrete member and importance of control of deflections.	CO1	14 Marks

(OR)

10	A PSC beam is having a rectangular section 100mm wide and 200mm deep span over 2.8m. The beam is prestressed by a straight cable containing 5 wires of 5mm diameter stressed to 1250N/mm^2 at an eccentricity of 37mm. Assume the modular ratio as 6. The Ec=34KN/mm^2. Calculate the maximum deflection of beam at the following stages: i) Prestress+ Self weight of beam. ii) Prestress+ Self weight of beam+ Imposed Load of 8 KN/m.	CO2	14 Marks

CODE No.:14BT80102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

ESTIMATION, COSTING & VALUATION

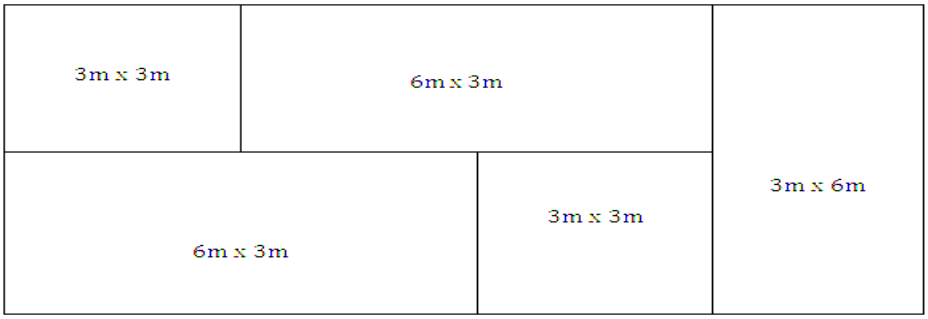
[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

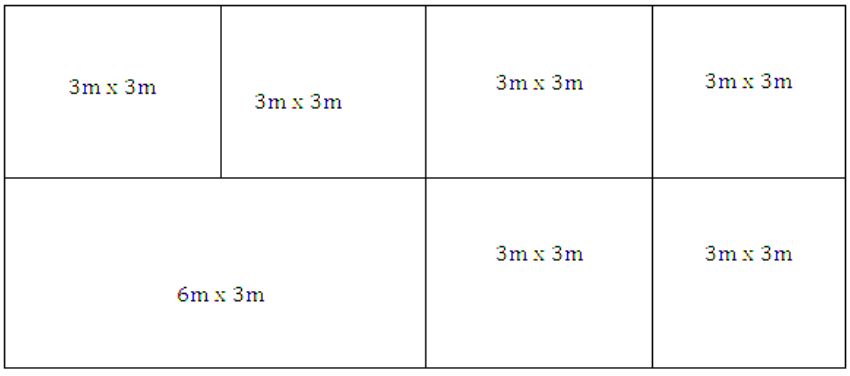
UNIT-I

1	a)	Explain deduction for segmental arch openings and deduction for lintels over openings.	CO1	2 Marks
	b)	Estimate the quantity of (i) Earth work Excavation, (ii) Footing concrete, (iii) Masonry in footing, (iv) D.P.C and (v) Brick work in super structure for the building from the given plan and section having following size: Wall thickness = 230mm, head room height = 3.0m, footing concrete = 1m x 0.3m, I footing = 0.7 x 0.3m, II footing = 0.5 x 0.3m, Plinth wall = 0.4 x 0.4m, flooring concrete = 150mm, floor finish CM 1:3 = 25mm, DPC = 20mm, roof slab = 125mm, weathering course L.C = 75mm. Assume the base of footing is 1.1m below GL.	CO2	12 Marks



(OR)

2	a)	Discuss briefly about bar bending schedule.	CO1	3 Marks
	b)	Estimate the quantity of (i) Earth work Excavation, (ii) Footing concrete, (iii) Masonry in footing and (iv) Brick work in super structure for the building from the given plan and section having following size: Wall thickness = 300mm, head room height = 3.0m, footing concrete = 1m x 0.3m, I footing = 0.7 x 0.3m, II footing = 0.5 x 0.3m, Plinth wall = 0.4 x 0.5m, flooring concrete = 150mm, floor finish CM 1:3 = 25mm, DPC=25mm, roof slab = 125mm, weathering course L.C = 75mm. Assume the base of footing is 1.4m below GL.	CO2	11 Marks

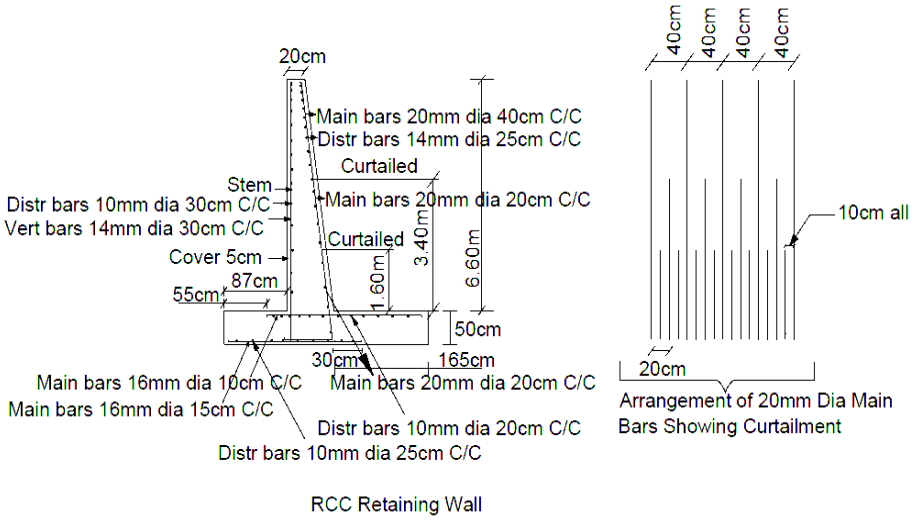


UNIT-II

3	a)	How can the number of main bars and distribution bars in slabs be found out? Mention the formula.	CO2	3 Marks
	b)	Prepare a detailed estimate for supplying and laying 175mm dia glazed stone ware pipe for 100m length joining with 1:1.5 cement mortar including trenching up to a depth of 85cm. Estimate should be prepared to include all materials. (take length of pipe is 60 cm)	CO2	11 Marks

(OR)

4		Prepare a detailed estimation of RCC retaining wall of 34m in length whose cross section is given below, assume rate of concrete is Rs. 3700/- per cum and rate of steel is Rs. 4600/- per quintal	CO2	14 Marks



RCC Retaining Wall

UNIT-III

5	a)	Write the detailed specifications of Lime concrete in roof terracing.	CO1	5 Marks
	b)	What is meant by overhead costs?	CO1	2 Marks
	c)	Evaluate the cost of M15 grade concrete in foundation with brick ballast of 40mm thick. Take 10cum.	CO2	7 Marks

(OR)

6	a)	Write the general specifications of third class and fourth class building.	CO1	5 Marks
	b)	Evaluate the cost of brick work (I class) in super structure with 20 x 10 x 10cm brick with 1:5 cement mortars. Take 15cum	CO2	9 Marks

UNIT-IV

7		Explain the different types of contract systems. Explain any two methods with their advantages and disadvantages.	CO3	14 Marks

(OR)

8	a)	Prepare a contract document for giving a building on lease.	CO3	7 Marks
	b)	Explain the following briefly: i) Earnest money deposit. ii) Security deposit. iii) Comparative statement. iv) Termination of contract.	CO1	7 Marks

UNIT-V

9	a)	What is depreciation?	CO1	10 Marks
	b)	Calculate the standard rent of a government residential building newly constructed from the following data: i) Cost of land Rs. 15,22,000. ii) Cost of construction of the building Rs. 15,00,000. iii) Cost of roads within the compound, and fencing Rs. 2,00,000. iv) Cost of electric installation including fans - 8% of the cost of building. v) Municipality house tax - Rs. 2400 per annum. vi) Water tax - Rs. 1250 per annum. vii) Property tax - Rs. 950 per annum.	CO1	4 Marks

(OR)

10	a)	What is the purpose of valuation?	CO1	2 Marks
	b)	Explain the methods of valuation.	CO2	10 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

GROUND IMPROVEMENT TECHNIQUES

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Differentiate between consolidation and compaction. Give examples.	CO1	7 Marks
	b)	What are the factors affecting the selection of ground improvement techniques?	CO1	7 Marks
		(OR)		
2	a)	Discuss the various foundation techniques adopted in expansive soils.	CO1	7 Marks
	b)	With neat sketch, explain in situ densification methods in cohesive soil.	CO1	7 Marks

UNIT-II

3	a)	List various drainage techniques and illustrate the same with the help of diagrams.	CO1	7 Marks
	b)	Illustrate flownet for a weir with cuff off wall on i) Upstream. ii) Down Stream.	CO1	7 Marks
		(OR)		
4	a)	Discuss about well point system.	CO1	7 Marks
	b)	Demonstrate dewatering using sumps and ditches with the help of neatly labelled sketch.	CO1	7 Marks

UNIT-III

5	a)	Explain in details the role of ground improvement in foundation engineering.	CO1	7 Marks
	b)	Explain single and multistage well point system of dewatering.	CO2	7 Marks
		(OR)		
6	a)	Explain the open sumps and vacuum well dewatering systems.	CO3	7 Marks
	b)	What are the filter requirements of a filler material around the drains?	CO1	7 Marks

UNIT-IV

7	a)	Explain in detail the stages of grouting with neat sketch.	CO4	7 Marks
	b)	Explain in detail about post grout techniques.	CO4	7 Marks
		(OR)		
8	a)	Discuss cement, lime and bitumen stabilization along with its merits and demerits.	CO4	7 Marks
	b)	Explain in detail mechanical stabilization of soils.	CO4	7 Marks

UNIT-V

9	a)	What are the design principles of reinforced earth wall?	CO1	7 Marks
	b)	What are the different stability checks that are to be applied on reinforced earth walls?	CO1	7 Marks
		(OR)		
10	a)	Explain the properties and applications of geo textiles.	CO5	7 Marks
	b)	Explain different functions of geo textiles with neat sketches.	CO5	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

UTILIZATION OF ELECTRICAL ENERGY

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the factors to be considered for selection of motor for a particular application.	CO1	7 Marks
	b)	The outside surface of a 12hp motor is equivalent to a cylinder of 65cm and 1metre length. The motor weighs 400kg and has a specific heat of 700 J/kg/^{0}C. The outer surface is capable of heat dissipation of 12 W/m^2/^{0}C. Find the final temperature rise and thermal constant of motor when operating at full load with an efficiency of 90%.	CO4	7 Marks

(OR)

2	a)	Explain in detail about various types of industrial loads.	CO1	7 Marks
	b)	Explain the concept of load equalization. Derive load equalization for decreasing load condition.	CO1	7 Marks

UNIT-II

3	a)	State and explain laws of illumination.	CO2	4 Marks
	b)	Define: i) Candle power. ii) Luminous intensity. iii) Illumination. iv) Luminous efficiency.	CO2	4 Marks
	c)	Two similar lamps having uniform intensity of 500 candle power in all directions below the horizontal are mounted at a height of 4 meters. What must be the maximum spacing between the lamps so that the illumination on the ground midway between the lamps shall be at least one half the illuminations directly under the lamps?	CO2	6 Marks

(OR)

4	a)	Explain the different measurement techniques used for luminous intensity.	CO2	7 Marks
	b)	A lamp fitted with 120^0 angled cone reflector illuminates circular area of 200 metre in diameter. The illumination of the disc increases uniformly from 0.5 metre-candle at the edge to 2 metre-candle at the centre. Determine: i) Total light received. ii) Average illumination of the disc. iii) Average c.p. of the source.	CO4	7 Marks

UNIT-III

5	a)	Explain the properties required for material to be used as heating element.	CO1	7 Marks
	b)	The power required for dielectric heating of a slab of resin 150cm^2 in area and 2cm thick is 200 watts, frequency of 30MHz. The material has a relative permittivity of 5 and power factor of 0.05. Determine the voltage necessary and current flowing through the material. If the voltage is limited to 600V, what is the value of frequency to get same heating effect?	CO4	7 Marks

(OR)

6	a)	Explain in detail about carbon arc welding with neat sketch.	CO1	7 Marks
	b)	What are the differences between AC welding and DC welding?	CO1	7 Marks

UNIT-IV

7	a)	For a quadrilateral speed-time curve of an electric train, derive expression for the distance between stops and speed at the end of the coasting period.	CO2	7 Marks
	b)	A train is required to run between stations 1.6kms apart at an average speed of 40km/hr. The run is to be made from a quadrilateral speed-time curve. The acceleration is 2km/hr/sec. The coasting and braking retardations are 0.16km/hr/sec and 3.2km/hr/sec respectively. Determine the duration of acceleration, coasting and braking and the distance covered in each period.	CO5	7 Marks

(OR)

8	a)	For a trapezoidal speed-time curve of an electric train, derive expression for maximum speed and distance between stops.	CO2	7 Marks
	b)	A train is to be run between two stations 5kms apart at an average speed of 50km/hr. If the maximum speed is to be limited to 70km/hr, acceleration to 2km/hr/sec, braking retardation to 4km/hr/sec and coasting retardation to 0.1km/hr/sec. Determine the speed at the end of coasting, duration of coasting period and braking period.	CO5	7 Marks

UNIT-V

9	a)	Derives the expression for the tractive effort for train on a level track.	CO1	7 Marks
	b)	Define: i) Dead weight. ii) Accelerating weight. iii) Adhesive weight.	CO1	7 Marks

(OR)

10	a)	Explain dead weight, accelerating weight and train resistance referred to traction.	CO1	7 Marks
	b)	An electric locomotive of 100 tonne can just accelerate a train of 500 tonne (trailing weight) with an acceleration of 1km/hr/sec on an up gradient 1 in 1000. Tractive resistance of the track is 45 newton/tonne and the rotational inertia is 10%. If this locomotive is helped by another locomotive of 120 tonne, find i) the trailing weight that can be hauled up the same gradient, under the same condition ii) the maximum gradient, the trailing hauled load remaining unchanged. Assume adhesive weight expressed as percentage of total dead weight to be same for both the locomotives.	CO4	7 Marks

CODE No.:14BT80202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

HVDC AND FACTS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Compare AC and DC transmission systems.	CO1	7 Marks
	b)	Draw the schematic diagram of a typical HVDC converter station and explain the role of terminal equipment in the operation of HVDC link.	CO1	7 Marks
		(OR)		
2	a)	With neat sketches, explain the different kinds of DC links available.	CO1	7 Marks
	b)	Explain the effect of overlap angle on the performance of converter circuit. Explain the combined characteristics of rectifier and inverter.	CO1	7 Marks

UNIT-II

3	a)	Explain in detail about individual phase control firing scheme. Also mention the drawbacks of this scheme.	CO2	7 Marks
	b)	What are the adverse effects of harmonics produced by the HVDC converters?	CO2	7 Marks
		(OR)		
4	a)	Discuss about the principles of DC link control.	CO1	7 Marks
	b)	Discuss the need for reactive power control in HVDC power stations.	CO1	7 Marks

UNIT-III

5	a)	Describe the basic types of FACTS controllers with their neat sketch.	CO1	7 Marks
	b)	Discuss concept of FACTS and also explain the importance of controllable parameters.	CO1	7 Marks
		(OR)		
6	a)	Explain the importance of reactive power control in AC transmission system.	CO1	7 Marks
	b)	Discuss the factor which limits the loading capability of AC transmission line.	CO1	7 Marks

UNIT-IV

7	a)	Explain basic operating principle of STATCOM with neat sketch and discuss its characteristics.	CO1	8 Marks
	b)	Discuss comparisons between shunt compensators.	CO1	6 Marks
		(OR)		
8	a)	Discuss basic operating control scheme for SSSC.	CO2	7 Marks
	b)	Explain operating principle and characteristics of TCSC with neat sketch.	CO1	7 Marks

UNIT-V

9	a)	Explain the control system adopted for control of P and Q using UPFC.	CO2, CO3	7 Marks
	b)	Explain about generalized FACTS controller.	CO2, CO3	7 Marks
		(OR)		
10		Discuss basic operating principles and control characteristics of IPFC.	CO2, CO3	14 Marks

CODE No.:14BT80203 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

POWER QUALITY

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define power quality. Explain the reasons for increased concern in power quality.	CO1	7 Marks
	b)	Briefly explain about the power quality assessment procedure.	CO1	7 Marks
		(OR)		
2		What are various terms used in power quality? Explain them in detail.	CO1	14 Marks

UNIT-II

3	a)	Explain the concept of area of vulnerability for estimating voltage sag performance.	CO2	7 Marks
	b)	Discuss long duration voltage variations in power system.	CO1	7 Marks
		(OR)		
4	a)	Explain various causes of voltage sags and effect of voltage sags on loads.	CO1	7 Marks
	b)	Discuss various solutions at the end user level for protection from voltage sag.	CO2	7 Marks

UNIT-III

5	a)	Differentiate current versus voltage harmonic distortion.	CO2	7 Marks
	b)	List various sources of harmonics in power system and explain.	CO2	7 Marks
		(OR)		
6		Explain the design aspects of passive harmonic filter and state the standards on harmonics.	CO3	14 Marks

UNIT-IV

7	a)	What are the objectives of power quality monitoring? Discuss about the considerations in choosing locations for monitoring power quality.	CO1	7 Marks
	b)	Write a brief note on power quality monitoring equipment.	CO1	7 Marks
		(OR)		
8		What are different streams of power quality data analysis? Explain.	CO1	14 Marks

UNIT-V

9	a)	Explain the operation of unified power quality conditioner with necessary diagram.	CO1	8 Marks
	b)	Discuss the operation solid state transfer switch to compensate and transfer power under voltage sag or swell condition.	CO1	6 Marks
		(OR)		
10	a)	Discuss the operation of distribution static compensator used for sag mitigation.	CO1	7 Marks
	b)	Explain the operation of dynamic voltage restorer with necessary application.	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

SMART GRID TECHNOLOGY

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write a short note on "need of electricity". Draw the power distribution diagram defining all the sections of power grid.	CO1	7 Marks
	b)	Differentiate between resilience grid and self healing grid.	CO1	7 Marks
		(OR)		
2	a)	Describe the opportunities and challenges related to smart grid.	CO1	7 Marks
	b)	Discuss about present development in smart grid considering any one case study.	CO1	7 Marks

UNIT-II

3	a)	Explain in detail about radio communication.	CO2	7 Marks
	b)	Explain about mobile communication in smart grid.	CO2	7 Marks
		(OR)		
4	a)	Explain the various standards for information exchange and differentiate IEC 61850 protocol and distribution network protocol.	CO4	8 Marks
	b)	Explain about power line communication.	CO2	6 Marks

UNIT-III

5	a)	Briefly explain the components involved in cryptography and discuss about the possible threats.	CO1	7 Marks
	b)	Why data authentication is required in information exchange? What are the merits of message digest? Explain the process of signing a message with the message digest.	CO1	7 Marks
		(OR)		
6	a)	Write about digital signatures. What are various approaches for digitally signing messages?	CO4	7 Marks
	b)	List out different mechanisms proposed by IEEE 1686 - IEEE standard for substation Intelligent Electronic Devices (IEDs) cyber security capabilities. Explain them.	CO4	7 Marks

UNIT-IV

7	a)	List out the benefits of advanced metering. What are key components of smart metering?	CO1	7 Marks
	b)	How does price based Demand Side Integration (DSI) is implemented?	CO1	7 Marks
		(OR)		
8		Explain about communications infrastructure and protocols for smart metering.	CO1	14 Marks

UNIT-V

9	a)	Write short note on state estimation.	CO3	7 Marks
	b)	Explain in detail about outage management systems.	CO3	7 Marks
		(OR)		
10		A 50MVA, 11kV generator has $Z_1 = Z_2 = j0.25$p.u, $Z_0 = j0.08$p.u. A line to ground fault occurs on the generator terminals. Find the fault current and line to line voltages during limit conditions. Assume that the generator neutral is grounded and that the generator is operating at half load and at rated voltage at the occurrence of fault.	CO3	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

SOLAR AND WIND ENERGY CONVERSION SYSTEMS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe in detail about the important components of the wind power system with neat diagram.	CO1	7 Marks
	b)	What are the environmental aspects associated with wind energy conversion systems? Explain.	CO1	7 Marks
		(OR)		
2	a)	Explain about system control requirements of wind power system.	CO2	7 Marks
	b)	How to determine the wind turbine rating? Explain in detail.	CO3	7 Marks

UNIT-II

3	a)	Explain the basic construction of PV cell with its performance enhancing features.	CO3	7 Marks
	b)	Draw and explain the equivalent circuit of PV module.	CO3	7 Marks
		(OR)		
4	a)	Draw and explain P-V characteristic of the PV module.	CO3	7 Marks
	b)	Explain various factors influencing the electrical design of solar array.	CO3	7 Marks

UNIT-III

5		Explain the various strategies used for operation of an MPPT. What is the importance of MPPT in a SPV system?	CO2	14 Marks
		(OR)		
6	a)	Explain the operation of line commutated inverters used solar energy systems with the help of neat diagram.	CO2	7 Marks
	b)	Discuss how the solar and wind energy system are synchronizing with the grid.	CO2	7 Marks

UNIT-IV

7	a)	Explain the function of different components in wind energy conversion system.	CO3	10 Marks
	b)	Discuss the role of wind energy conversion system in power sector.	CO3	4 Marks
		(OR)		
8		Explain the operation of self excited induction generator in wind energy conversion system.	CO3	14 Marks

UNIT-V

9		What are the power quality issues affected by distributed generation? Explain about them.	CO3	14 Marks
		(OR)		
10	a)	Draw the electrical schematic of grid-connected PV system. Explain the role of each component represented in the schematic.	CO2	7 Marks
	b)	Draw the electrical schematic of standalone wind power system. Explain the role of each component represented in the schematic.	CO2	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

QUALITY MANAGEMENT AND RELIABILITY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the functions of quality management?	CO1	6 Marks
	b)	What is Quality Function Design(QFD)? What are the different stages of QFD process? Where it is applicable?	CO3	8 Marks

(OR)

2	a)	What do you understand by POKA YOKE? How this concept is utilized.	CO4	7 Marks
	b)	Why standardization is carried out. What is the importance of Bureau of Indian Standards? What are its duties?	CO2	7 Marks

UNIT-II

3		Briefly explain the seven tools of quality control.	CO2	14 Marks

(OR)

4		Following are the observations of the inspection results of magnets. Calculate the average fraction defective and find out the control limits and construct a suitable control chart.	CO2	14 Marks

Week No.	No. Inspected	No. of Defective		Week No.	No. Inspected	No. of Defective
1	724	48		10	736	47
2	763	83		11	739	50
3	748	70		12	723	47
4	748	85		13	748	57
5	724	45		14	770	51
6	727	56		15	756	71
7	726	48		16	719	53
8	719	67		17	757	34
9	759	37		18	760	29

UNIT-III

5		Construct the OC curve for the single sampling plan: N = 830 n = 62 c = 1 and r = 2. Use at least seven points.	CO3	14 Marks

(OR)

6		Briefly explain various types of sampling plans with merits and demerits.	CO3	14 Marks

UNIT-IV

7	a)	Explain the following related to reliability. i) MTBF. ii) MTTF. iii) Hazard rate. iv) Redundancy.	CO1	7 Marks
	b)	Define: i) failure rate. ii) Hazard rate. iii) Failure rate curve.	CO1	7 Marks

(OR)

8	a)	Explain the difference between time dependent and stress dependent hazard models.	CO2	5 Marks
	b)	Given a budget of Rs.700 and the following data on three components that must operate in series. Using marginal analysis, determine the optimum number of redundant units. Compute the achieved reliability.	CO4	9 Marks

Components	Reliability	Unit Cost Rs.
1	0.80	200
2	0.90	100
3	0.95	75

UNIT-V

9		An electronic equipment contains 500 resistors. When any resistor fails, it is replaced. The cost of replacing resistor individually is Rs.20, if all the resistors are replaced at the same time the cost per resistor is Rs.5, the percentage surviving S(i) at the end of month **i** is given in table below. What is the optimum replacement plan?	CO5	14 Marks

Month(i)	0	1	2	3	4	5
S(i)	100	90	75	55	30	0

(OR)

10	a)	What do you mean by redundancy? Explain various types of redundancies.	CO5	6 Marks
	b)	Write short notes on:	CO5	8 Marks
		i) Fault tree analysis.		
		ii) Application of reliability in maintenance strategies.		

CODE No.:14BT80401 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

CELLULAR AND MOBILE COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly describe the operation of cellular mobile system.	CO1	7 Marks
	b)	List out different types of cellular systems.	CO1	7 Marks
		(OR)		
2	a)	Explain in detail about frequency reuse of channels.	CO2	7 Marks
	b)	Determine the distance from nearest co-channel cell for a cell having a radius of 0.6Km and co-channel reuse factor of 12.	CO2	7 Marks

UNIT-II

3	a)	What is co-channel interference? How it can be minimized? Explain.	CO1	7 Marks
	b)	Explain how a specific antenna patter reduces the co-channel.	CO1	7 Marks
		(OR)		
4	a)	Analyze the practical difficulties in the implementation of Hand-off and how these are addressed in different types of Hand-off strategies.	CO2	7 Marks
	b)	Brief out the architecture and the component of basic cellular system.	CO1	7 Marks

UNIT-III

5	a)	Distinguish different configurations of the antennas for cell site coverage.	CO1	7 Marks
	b)	Explain the different channel assignment strategies in cellular systems.	CO1	7 Marks
		(OR)		
6	a)	Explain how you obtain mobile point to point in different scenarios.	CO1	7 Marks
	b)	Explain how you manage the frequency allocations with a chart.	CO1	7 Marks

UNIT-IV

7	a)	With a neat diagram, explain the operation of Orthogonal Frequency Multiplexing.	CO4	7 Marks
	b)	Sketch the output MSK signal for a sequence of at least ten input bits, arbitrarily chosen. Demonstrate that the signal does have a constant envelope.	CO4	7 Marks
		(OR)		
8		A transmission bandwidth of 2MHz is available. Nyquist rolloff shaping is used in transmitting data. i) Find the bit rates that may be transmitted over this channel using PSK for roll off factors of 0.2, 0.25 and 0.5. ii) Nyquist roll off shaping of 0.25 is used. It is desired to transmit at a rate of 6.4Mbps over this channel. Show how this may be done.	CO2	14 Marks

UNIT-V

9	a)	Explain about CDMA system with neat block diagram.	CO2	7 Marks
	b)	Explain the frame structure of GSM system with suitable figures.	CO1	7 Marks
		(OR)		
10	a)	Compare GSM and IS-136 call setup procedures.	CO1	7 Marks
	b)	Explain in detail about TDMA, FDMA, and CDMA multiple access techniques.	CO1	7 Marks

CODE No.:14BT80403 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

SATELLITE COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw the geometry of geostationary link showing elevation azimuth and range and also derive the expression for elevation and azimuth angle.	CO1	7 Marks
	b)	A geostationary satellite moving in an equational circular orbit is at a height of a 5786km from the earth surface. If the earth radius is taken as 6378km. Determine the theoretical maximum coverage angle and maximum slant range.	CO2	7 Marks
		(OR)		
2	a)	What is Kepler's three laws of planetary motion? Give the mathematical formulation of Kepler's third law of planetary motion.	CO1	7 Marks
	b)	A low earth orbit satellite is in a circular polar orbit with an altitude **h** of 1000km. A transmitter on the satellite has a frequency of 2.65GHz. Find: i) The velocity of the satellite in orbit ii) The component of velocity toward an observer at an earth station as the satellite appears over the horizon, for an observer who is in the plane of the satellite orbit. iii) Hence, find the Doppler shift of the received signal at the earth station. Use a mean earth radius value $\mathbf{r}_e$ of 6378km.	CO4	7 Marks

UNIT-II

3	a)	A satellite is in an elliptical orbit with a perigee of 1000km and an apogee of 4000km. Find the period of the orbit and eccentricity of the orbit, assuming the mean earth radius as 6378.14km.	CO4	7 Marks
	b)	Discuss about various satellite services.	CO1	7 Marks
		(OR)		
4	a)	In a satellite link, the propagation loss is 200dB. Margins and losses account for another 3dB. The receiver [G/T] is 11dB and the [EIRP] is 45dBW. Calculate the received [C/N] for a system band width of 36MHz.	CO3	6 Marks
	b)	Explain in brief telemetry, tracking and command of the satellite system.	CO1	8 Marks

UNIT-III

5	a)	Design general link equation. Find out an expression for C/N and G/T ratios. Explain the importance of these ratios on satellite link design.	CO3	8 Marks
	b)	State the type of satellite antenna normally used to produce a wide beam of radiation pattern providing global coverage. How are spot beams provided?	CO1	6 Marks
		(OR)		
6	a)	Analyze the orbital effects in the communication system performance.	CO2	6 Marks
	b)	A geostationary satellite carries a transponder with a 20W transmitter at 4 GHz. The transmitter is operated at an output power of 10W and drives an antenna with a gain of 30dB. An earth station is at the center of the coverage zone of the satellite at a range of 38,500km. Find: i) The flux density at the earth station in dBW/m^2. ii) The power received by an	CO4	8 Marks

antenna with a gain of 39dB in dBW. iii) The EIRP of the transponder in dBW.

UNIT-IV

7	a)	Analyze and discuss the Delay and Throughput considerations in a satellite system.	CO2	7 Marks
	b)	Summarize the advantages and disadvantages of low and medium earth orbits.	CO1	7 Marks
		(OR)		
8	a)	Compare geostationary and geosynchronous satellites.	CO1	7 Marks
	b)	An earth station antenna has a diameter of 30m, has an overall efficiency of 68% and is used to receive a signal at 4150MHz. Calculate gain of the antenna.	CO3	7 Marks

UNIT-V

9	a)	Draw the functional elements of GPS and explain their working.	CO3	7 Marks
	b)	Find the maximum Doppler shift of the L1 signal frequency for a GPS satellite at an altitude of 20,200km when the satellite has elevation angle of 10 degrees. The maximum Doppler shift occurs when the observer is in the plane of the satellite orbit. Find the velocity of the satellite and the component of velocity toward the observer.	CO3	7 Marks
		(OR)		
10	a)	Give the GPS navigation message format and provide the basic functions of GPS receiver.	CO3	7 Marks
	b)	Explain the C/A code Accuracy in GPS.	CO3	7 Marks

CODE No.:14BT80501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

DESIGN PATTERNS

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is Pattern? Describe the essential elements of Design pattern.	CO1	7 Marks
	b)	Differentiate between Analysis patterns and Design patterns.	CO2	7 Marks
		(OR)		
2	a)	Explain Design patterns in Smalltalk MVC.	CO1	7 Marks
	b)	Describe catalog of Design patterns. Also describe how to organize them with an example.	CO2	7 Marks

UNIT-II

3	a)	Describe the structure of the Factory Method.	CO4	7 Marks
	b)	Discuss about the advantages of Singleton pattern.	CO2	7 Marks
		(OR)		
4		Briefly explain the builder pattern with its intent, architecture, consequences and implementation issues.	CO2	14 Marks

UNIT-III

5	a)	Describe the intent, motivation and applications of composite patterns.	CO2	7 Marks
	b)	Write short notes on decorator pattern.	CO3	7 Marks
		(OR)		
6	a)	Explain facade pattern with an application.	CO3	7 Marks
	b)	Why we are using the wrapper patterns? Draw and explain the structure of it.	CO3	7 Marks

UNIT-IV

7	a)	What is an Iterator Design pattern? Explain with an example.	CO2	7 Marks
	b)	Explain behavioral patterns for chain of responsibility pattern.	CO2	7 Marks
		(OR)		
8	a)	Explain the role of memento pattern in design of a particular pattern.	CO2	7 Marks
	b)	Give brief description about the implementation of publish - subscribe design pattern.	CO3	7 Marks

UNIT-V

9		Discuss about formatting and embellishing the user interface.	CO4	14 Marks
		(OR)		
10	a)	Explain in detail about document structure and designing a document editor.	CO4	7 Marks
	b)	Describe in detail about spell checking and Hyphenation problem.	CO1	7 Marks

CODE No.:14BT80502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

BIG DATA

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is Big Data? Explain four views of Big Data.	CO1	7 Marks
	b)	What is standardizing data? Explain different standardization procedures.	CO1	7 Marks
		(OR)		
2	a)	Write down the importance and the applications of Big Data.	CO1	7 Marks
	b)	Distinguish between Univariate and Multivariate outliers.	CO2	7 Marks

UNIT-II

3	a)	Explain Hadoop Ecosystem.	CO2	7 Marks
	b)	Explain building blocks of Hadoop.	CO2	7 Marks
		(OR)		
4		Design of HDFS and Hadoop file system.	CO3	14 Marks

UNIT-III

5	a)	Explain the implementation of map reduce concept with an example.	CO1	7 Marks
	b)	Distinguish between the old and new versions of Hadoop API for Map Reduce frame work.	CO2	7 Marks
		(OR)		
6	a)	What is job scheduling? Explain various schedulers in Map Reduce.	CO1	7 Marks
	b)	Write about Hadoop YARN with failures in classic Map Reduce.	CO1	7 Marks

UNIT-IV

7	a)	Explain architecture of HIVE with neat sketch.	CO1	7 Marks
	b)	Explain installing and running PIG.	CO1	7 Marks
		(OR)		
8	a)	Explain user defined functions in HIVE with examples.	CO1	7 Marks
	b)	Explain data preprocessing operators in PIG.	CO1	7 Marks

UNIT-V

9	a)	What are the reasons for adopting Hadoop at **Last.fm**?	CO2	6 Marks
	b)	How Hadoop is used at Facebook?	CO3	8 Marks
		(OR)		
10	a)	Briefly explain Nutch search engine.	CO1	7 Marks
	b)	What are the features of Apache Mahout?	CO1	7 Marks

CODE No.:14BT81201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

CLOUD COMPUTING

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the pre-existing technologies of cloud computing.	CO1	7 Marks
	b)	Give the NIST standard cloud computing definition. Briefly explain cloud computing challenges and risks.	CO1	7 Marks
		(OR)		
2	a)	Explain different cloud actor roles and boundaries.	CO1	7 Marks
	b)	Briefly discuss the comparison of typical cloud delivery model control levels.	CO2	7 Marks

UNIT-II

3	a)	Explain different types and illustrate the process of dynamic scaling.	CO1	7 Marks
	b)	What is rapid elasticity? Discuss the elastic resource capacity architecture.	CO1	7 Marks
		(OR)		
4	a)	Briefly discuss the data center technology components and technologies with suitable examples.	CO1	7 Marks
	b)	Explain the virtualization layered architecture with neat sketch.	CO1	7 Marks

UNIT-III

5	a)	What is a hypervisor? Discuss different types of hypervisors with suitable examples.	CO1	7 Marks
	b)	Explain hypervisor clustering architecture.	CO1	7 Marks
		(OR)		
6	a)	Briefly discuss the direct I/O Access architectures.	CO1	7 Marks
	b)	Explain in-detail intra-storage device vertical data tiering architecture.	CO1	7 Marks

UNIT-IV

7		Describe service models in detail with suitable examples.	CO2	14 Marks
		(OR)		
8	a)	Discuss about cost management considerations in cloud.	CO1	7 Marks
	b)	List and explain cloud usage cost metrics.	CO1	7 Marks

UNIT-V

9	a)	Define virtualization? Identify the benefits of virtualized technology.	CO2	8 Marks
	b)	List the objectives of virtualization.	CO1	6 Marks
		(OR)		
10		Describe in-detail about Microsoft Hyper-V and working procedure.	CO1	14 Marks

CODE No.:14BT81202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

CRYPTOGRAPHY AND NETWORK SECURITY

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	A generalization of the Caesar cipher known as the affine Caesar cipher has the following form: For each plaintext letter substitute the ciphertext letter: C = E([a, b], p) = (ap + b) mod 26. Encrypt plaintext "CRYPTOGRAPY AND NETWORK SECURITY" using affine cipher. Take a = 3; b = 2.	CO1	7 Marks
	b)	Explain any one Transposition technique with suitable example.	CO1	7 Marks
		(OR)		
2	a)	List and explain X.800 Security Services.	CO1	7 Marks
	b)	Prove the relationship between security mechanisms and attacks in terms of a matrix.	CO2	7 Marks

UNIT-II

3	a)	Illustrate the functions used in AES encryption algorithm with neat diagram	CO1	7 Marks
	b)	Analyze Brute force attack is applied on DES and AES ciphers. Compare with Cryptanalysis with respect to DES and AES.	CO1	7 Marks
		(OR)		
4	a)	Justify why decryption function is used for both encryption and decryption process in CFB, OFB and CTR block modes of operation.	CO1	7 Marks
	b)	Apply RSA algorithm to perform encryption and decryption for $p = 3$; $q = 11$; $e = 7$; $M = 5$.	CO1	7 Marks

UNIT-III

5	a)	Define authenticator. List and explain various types of functions that are used to produce authenticators.	CO1	9 Marks
	b)	Draw and explain Data Authentication algorithm.	CO1	5 Marks
		(OR)		
6	a)	Draw the format of X.509 certificates.	CO1	6 Marks
	b)	Explain Mutual authentication and One way authentication protocols.	CO1	8 Marks

UNIT-IV

7	a)	Sketch the general format of a PGP message.	CO1	6 Marks
	b)	Describe the classes of security for public-key certificates provided by VeriSign.	CO2	8 Marks
		(OR)		
8	a)	Briefly discuss about the format of an Encapsulating Security Payload packet.	CO1	7 Marks
	b)	Discuss about features and components of Secure Electronic Transaction.	CO2	7 Marks

UNIT-V

9	a)	What metrics are useful for profile-based intrusion detection?	CO2	7 Marks
	b)	List and briefly define four techniques used to avoid guessable passwords.	CO2	7 Marks

(OR)

10	a)	What are typical phases of operation of a virus or worm?	CO2	7 Marks
	b)	List four techniques used by firewalls to control access and enforce a security policy.	CO2	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

CRYPTOGRAPHY AND NETWORK SECURITY

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is the difference between a monoalphabetic cipher and a polyalphabetic cipher?	CO1	7 Marks
	b)	i) Apply columnar transposition for the following plain text "**THISCOURSEOFIASWILLHELPYOUTOSHARPEN**" using encryption Key "**6 4 3 5 1 7 2**" ii) Encrypt the plain text "**THISCOURSE**" using rail fence technique of length '**3**'.	CO1	7 Marks
		(OR)		
2	a)	What is the difference between an unconditionally secure cipher and a computationally secure cipher?	CO1	7 Marks
	b)	Calculate decryption key for the following encryption key and produce cipher text for the given plain text "**OK**" using Hill cipher $\begin{bmatrix} 9 & 4 \\ 5 & 7 \end{bmatrix}$.	CO1	7 Marks

UNIT-II

3	a)	Describe the mechanism on how public-key cryptosystem solves the problem with the symmetric encryption.	CO1	7 Marks
	b)	Discuss about RSA algorithm.	CO1	7 Marks
		(OR)		
4	a)	Briefly explain block cipher principles.	CO1	6 Marks
	b)	Users A and B use the Diffie-Hellman key exchange technique with a common prime $\mathbf{q = 71}$ and a primitive root $\boldsymbol{\alpha = 7}$. i) If user A has private key XA = 5, what is A's public key YA? ii) If user B has private key XB = 12, what is B's public key YB? iii) What is the shared secret key?	CO2	8 Marks

UNIT-III

5	a)	Define authenticator. List and explain various types of functions that are used to produce authenticators.	CO1	9 Marks
	b)	Draw and explain data authentication algorithm.	CO1	5 Marks
		(OR)		
6	a)	Draw the format of **X.509** certificates.	CO1	6 Marks
	b)	Explain mutual authentication and one way authentication protocols.	CO1	8 Marks

UNIT-IV

7	a)	Summarize IP security architecture.	CO1	7 Marks
	b)	Draw and explain **X.509** certificate revocation list.	CO1	7 Marks
		(OR)		
8	a)	Explain about HTTPS over SSL in detail.	CO2	7 Marks
	b)	Draw flow chart and explain about PGP message reception.	CO2	7 Marks

UNIT-V

9	a)	Discuss about various approaches of intrusion detection.	CO1	7 Marks
	b)	Discuss about various password selection strategies.	CO1	7 Marks
		(OR)		
10	a)	Elaborate different virus countermeasures for prevention of viruses.	CO1	7 Marks
	b)	Describe various firewall design principles.	CO1	7 Marks

CODE No.:14BT81204 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2018

INFORMATION RETRIEVAL SYTEMS

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the similarities and differences between use of fuzzy searches and term masking? What are the potential for each to introduce errors?	CO1	7 Marks
	b)	State the different standards in Information Retrieval Systems.	CO1	7 Marks
		(OR)		
2	a)	Explain Bayesian mathematics for mathematical algorithms.	CO3	7 Marks
	b)	Differentiate N-Gram data structures and PAT data structure.	CO1	7 Marks

UNIT-II

3	a)	Differentiate Full Item Indexing, Public File Indexing and Private File Indexing.	CO1	6 Marks
	b)	Briefly describe about Statistical Indexing.	CO2	8 Marks
		(OR)		
4	a)	Explain about classes of Automatic Indexing.	CO1	10 Marks
	b)	What is concept Indexing approach? Explain with a suitable example.	CO2	4 Marks

UNIT-III

5	a)	Describe various similarity measures used to calculate the similarity between the item and the search statement.	CO2	6 Marks
	b)	Exemplify ranking algorithms with examples.	CO2	8 Marks
		(OR)		
6	a)	Define clustering. What are the general guidelines for clustering?	CO2	6 Marks
	b)	Compare and contrast manual clustering and automatic term clustering.	CO2	8 Marks

UNIT-IV

7	a)	Describe the need for information visualization.	CO1	7 Marks
	b)	What is cognition and perception?	CO1	7 Marks
		(OR)		
8		What is continuity and connectedness? Briefly describe any two visualization techniques.	CO1	14 Marks

UNIT-V

9	a)	With a neat diagram, describe text streaming architecture.	CO1	7 Marks
	b)	Explain briefly hardware text search systems.	CO2	7 Marks
		(OR)		
10	a)	What is software text search algorithm? With an example, briefly describe Knuth-Pratt-Morris algorithm.	CO3	8 Marks
	b)	Explain the concept of push and pull process.	CO2	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Regular/Supplementary Examinations January - 2018

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) Prove that $(\neg P \wedge (\neg Q \wedge R)) \vee (Q \wedge R) \vee (P \wedge R) \Leftrightarrow R$ 6 Marks
   b) Derive $P \rightarrow (Q \rightarrow S)$ using the rule C P if necessary from $P \rightarrow (Q \rightarrow R), Q \rightarrow (R) \rightarrow S)$. 6 Marks

(OR)

2. a) Obtain the principal disjunctive normal form of the formula $P \rightarrow (P \wedge (P \rightarrow Q))$. 6 Marks
   b) Show that $R \wedge (P \vee Q)$ is a valid conclusion from the premises $P \vee Q, Q \rightarrow R, P \rightarrow M$ and $\neg M$ 6 Marks

UNIT-II

3. What is equivalence relation? If A = {1,2,3,4}, give an example of relation on A that is : 12 Marks
   i) Reflexive and symmetric, but not transitive
   ii) Reflexive and transitive, but not symmetric
   iii) Symmetric and transitive, but not reflexive

(OR)

4. a) If A = {1, 2, 3, 5, 30} and R is the divisibility relation, prove that **(A, R)** is a lattice but not a distributive lattice. 6 Marks
   b) Define Inverse function. Consider the function **f: R→R** defined by f(x) = 2x + 5. Let a function **g: R→R** be defined by $g(x) = \frac{1}{2}(x - 5)$. Prove that **g** is an inverse of **f**. 6 Marks

UNIT-III

5. a) What is group? Explain the axioms of a group with a suitable example. 6 Marks
   b) Show that any group G is abelian iff $(ab)^2 = a^2b^2$ for all $a, b \in G$. 6 Marks

(OR)

6. a) Consider the semi group $(R^+,*)$ and $(R, +)$ where R^+ is the set of all positive real numbers with usual multiplication * and + is the usual addition. Let the function $f: R^+ \rightarrow R$ be defined by $f(x) = \log_e x$ for any $x \in R^+$. Is f an isomorphism? Justify. 6 Marks
   b) Use mathematical induction to prove that $n^3 - n$ is divisible by 3 whenever n is a positive integer. 6 Marks

UNIT-IV

7. Find the generating functions for the following sequences. 12 Marks
   i) $1^2, 2^2, 3^2$,..... ii) 0, 2, 6, 12, 20, 30, 42..... iii) $1^3, 2^3, 3^3$,.....

(OR)

8. Solve the recurrence relation $a_n = 6a_{n-1} - 12a_{n-2} + 8a_{n-3}$, given that $a_o = 1$, $a_1 = 4$ and $a_2 = 28$. 12 Marks

UNIT-V

9. a) Distinguish between Euler circuits and Hamiltonian circuits. 6 Marks
   b) Explain Breadth first search and Depth first search algorithm for a spanning tree. 6 Marks

(OR)

10. a) Show that a connected multigraph has an Euler circuit if and only if each of its vertices has even degree. 6 Marks
    b) Define chromatic number of graph. Find the chromatic number of the following: 6 Marks
    i) Tree ii) Complete graph (Kn) iii) cycle (Cn)

CODE No.:16MC1HS01 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Regular/Supplementary Examinations January - 2018

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. Write Journal entries for the following transactions in the books of Mr. Rao. 12 Marks
   Jan. 1 Mr. Rao commenced a business with Rs. 1, 68,000
   Jan. 4 Bought goods from Dayanand Rs. 46, 800.
   Jan. 9 Cash withdrawn from bank for personal use Rs. 1, 400
   Jan. 10 Sold old furniture for Rs. 16,600
   Jan. 18 Sold goods to charishma Rs. 68, 200.
   Jan. 21 Commission paid to Harshika Rs. 3, 860
   Jan. 24 Cash deposited into Bank Rs. 24,100
   Jan. 31 Salaries paid through cheque Rs. 26,700

(OR)

2. Who are the users of accounting information? Why do they need the information? 12 Marks

UNIT-II

3. State and explain the importance and limitations of financial statements (final accounts). 12 Marks

(OR)

4. From the following details of Mrs. Roshan & Co., you are required to prepare Trading, Profit and Loss Account and the Balance Sheet for the year ended 31st Dec, 2015. 12 Marks

Particulars	Rs.	Particulars	Rs.
Sales	65,000	Discount Allowed	100
Sales Returns	500	Discount Received	500
Stock at the beginning	8,000	Salaries	3,000
Purchases	29,000	Interest paid	400
Purchase Returns	300	Furniture	3,000
Direct Wages	5,000	Buildings	20,000
Direct Expenses	5,000	Plant and machinery	20,000
Carriage inwards	4,000	Cash in Hand	1,000
Capital at the beginning	30,000	Bills payable	6,200
Drawings	5,000	Reserve for Bad and Doubtful Debts	500
Sundry Debtors	10,000	Bad debts	300
Sundry Creditors	12,000	Closing stock at the end	8,000

Additional Information:

1. Prepaid interest Rs. 100
2. Outstanding Salaries Rs. 500
3. Depreciate plant and machinery at 10% p.a. and Building at 5% p.a.

UNIT-III

5. What are the goals of a financial manager? 12 Marks

(OR)

6. Define and discuss the importance of financial management in business organizations. 12 Marks

UNIT-IV

7. How Ratio analysis is useful to the organizational development. 12 Marks

(OR)

8. Srikanth enterprises deals in the supply of hard ware parts of a computer. The following cost data is available for two successive periods. 12 Marks

Particulars	Year I (Rs.)	Year II (Rs.)
Sales	50000	120000
Fixed costs	10000	20000
Variable costs	30000	60000

Determine: i) BEP and ii) Margin of safety.

UNIT-V

9. Calculate the Net Present Value from the following particulars. The rate of return is 10%. Cost is Rs.50000. 12 Marks

Year	1	2	3	4	5
Cash inflow (Rs.)	15000	22000	25000	35000	40000

(OR)

10. Two proposals costing Rs 100000 and 150000 are under consideration. The company wants to earn at least 6% on its investment. Rate the projects under NPV. 12 Marks

Year/proposal	Proposal 1 (Rs.)	Proposal 2 (Rs.)
1	80000	110000
2	95000	145000
3	105000	122000
4	135000	82000
5	98000	165000

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. I Semester (SVEC16) Regular/Supplementary Examinations January - 2018

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) Modify the following decimal numbers to the bases indicated.
   i) 7562 to octal. 2 Marks
   ii) 1938 to hexadecimal. 2 Marks
   iii) 175 to binary 2 Marks
   b) Explain the floating-point representation. 6 Marks

(OR)

2. Discuss in detail the fixed-point representation. 12 Marks

UNIT-II

3. Draw and explain the logical configuration of shift registers with parallel load. 12 Marks

(OR)

4. a) Explain integrated circuits of digital components. 6 Marks
   b) Sketch the encoder and draw the truth table for it. 6 Marks

UNIT-III

5. Compare branch instruction, call subroutine instruction and a program interrupt. 12 Marks

(OR)

6. Explain data manipulation instructions of a computer. 12 Marks

UNIT-IV

7. List different phases of instruction cycle and explain the first phase in detail. 12 Marks

(OR)

8. Sketch and explain the control unit of a basic computer. 12 Marks

UNIT-V

9. Assess the DMA transfer technique with the block diagram. 12 Marks

(OR)

10. Define cache memory. Explain different mapping procedures in the organization of cache memory with suitable example. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Regular/Supplementary Examinations January - 2018

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. Illuminate Interprocess Communication. 12 Marks

(OR)

2. Explain the process states and Process Control Block. 12 Marks

UNIT-II

3. Consider the following set of processes with the length of the CPU burst given in milliseconds: 12 Marks

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

Draw the Gantt charts for FIFO, SJF, Priority and Round Robin (Quantum=1) and find out the minimum average waiting time among four algorithms.

(OR)

4. Compare and contrast preemptive and non-preemptive scheduling. 12 Marks

UNIT-III

5. Discuss algorithms that are used for deadlock avoidance. 12 Marks

(OR)

6. With suitable example, describe more precisely a system resource allocation graph 12 Marks

UNIT-IV

7. Discuss the Paging hardware and Paging model in memory management. 12 Marks

(OR)

8. Illustrate the following Page replacement algorithms: 12 Marks
   i) FIFO. ii) OPR. iii) LRU.

UNIT-V

9. Write about Protection and Security-Goals. 12 Marks

(OR)

10. Elucidate domain of protection. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Regular/Supplementary Examinations January - 2018

PROGRAMMING IN C

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Label any two major components of a computer system.	6 Marks
	b)	Identify the steps in creating and running a 'C' program.	6 Marks
		(OR)	
2.	a)	Write about the structure of 'C' program with suitable example.	6 Marks
	b)	Sketch the block diagram to create and run the 'C' program in Turbo C.	6 Marks

UNIT-II

3.	a)	Code the transpose of a given **n x n** matrix A in Turbo C.	6 Marks
	b)	Sketch the exit loop control statement with a suitable program.	6 Marks
		(OR)	
4.	a)	Explain multi-way selection statements in 'C' with suitable example.	6 Marks
	b)	Describe any two Iterative Statements in 'C' with an example	6 Marks

UNIT-III

5.	a)	Formulate n^{th} Fibonacci number generation using recursion.	6 Marks
	b)	Define function and explain about system defined functions with suitable example.	6 Marks
		(OR)	
6.	a)	Identify the following which refers the region of a program where a variable is available for use.	4 Marks
	b)	Exercise parameter passing mechanism in 'C' with a suitable example.	8 Marks

UNIT-IV

7.	a)	Argue about Enumerated types in 'C' with an example for creating colors type.	3 Marks
	b)	Explain about nested structure with an example.	4 Marks
	c)	Differentiate structures and Unions in 'C'.	5 Marks
		(OR)	
8.		With a suitable example, explain how enumerated types can be defined, declared and used.	12 Marks

UNIT-V

9.		Distinguish between binary and text files with accessing modes listed.	12 Marks
		(OR)	
10.	a)	Discuss about types of files in 'C'.	6 Marks
	b)	Collaborate Preprocessor directives in structured programming and its usage.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Supplementary Examinations August - 2018

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) Show that $(\neg P \wedge (\neg Q \wedge R)) \vee (Q \wedge R) \vee (P \wedge Q) \leftrightarrow R$ without using truth table. 6 Marks

   b) Show that the following premises are inconsistent. 6 Marks
   i) If Jack misses many classes through illness then he fails high school.
   ii) If Jack fails high school then he is uneducated.
   iii) If Jack reads a lot of books then he is not uneducated.
   iv) Jack misses many classes through illness and reads a lot of books.

(OR)

2. a) Obtain disjunctive normal form for $(P \wedge (P \rightarrow Q))$. 6 Marks

   b) Show that $R \rightarrow S$ can be derived from the premises: 6 Marks
   $P \rightarrow (Q \rightarrow S)$, $\neg R \vee P$ and Q.

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 g o f; f o g; f o f; g o g; f o h; h o f; and f o h o g. 6 Marks

   b) If A = {1,2,3,4} and B = {a,b,c,d}, determine if the following functions are one-to-one or onto : 6 Marks
   i) f = { (1,a), (2,a), (3,b), (4,d) }.
   ii) g = { (1,d), (2,b), (3,a), (4,c) }.

(OR)

4. a) Draw the Hasse diagram for the set:{3,9,27,54} under the partial ordering relations "divides" and indicate whether totally ordered or not. 6 Marks

   b) Establish the following distributive inequalities. 6 Marks
   i) $a \oplus (b * c) \leq (a \oplus b) * (a \oplus c)$
   ii) $a * (b \oplus c) \geq (a * b) \oplus (a * c)$
   For any a, b and c belonging to a lattice $< L, \leq >$.

UNIT-III

5. a) What is group? Explain the axioms of a group with a suitable example. 6 Marks

   b) Show that any group G is abelian **iff** $(ab)^2 = a^2b^2$ **for all** $a, b \in G$. 6 Marks

(OR)

6. a) Prove that set Z of all integers with the binary operation $a*b = a+b+1$ for all $a, b \in Z$ is abelian group. 6 Marks

   b) Prove by mathematical induction 6 Marks
   $1^2 + 2^2 + 3^2 + \ldots\ldots + n^2 = n(n+1)(2n+1)/6$.

UNIT-IV

7. Solve the recurrence relation $\mathbf{a_n - 9a_{n-1} + 26\ a_{n-2} - 24\ a_{n-3} = 0,}$ for $\mathbf{n \geq 3}$. 12 Marks

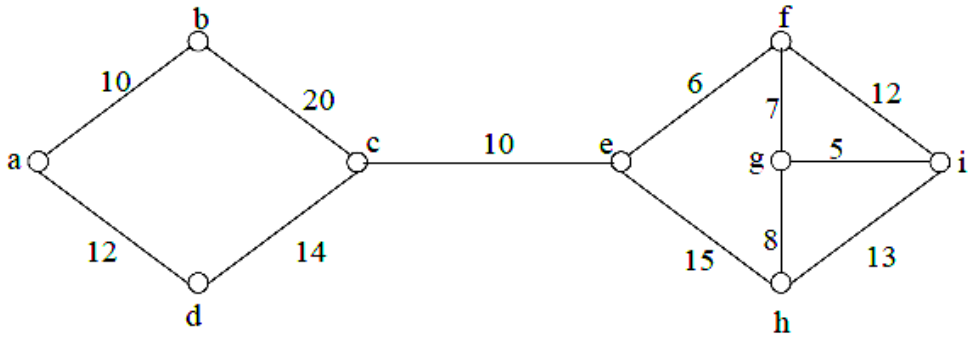
(OR)

8. Solve the recurrence relation $\boldsymbol{a_n - 7a_{n-1} + 16a_{n-2} - 12a_{n-3} = 0,\ n \geq 3}$ with $\boldsymbol{a_o = 1,\ a_1 = 4}$ and $\boldsymbol{a_2 = 8.}$ 12 Marks

UNIT-V

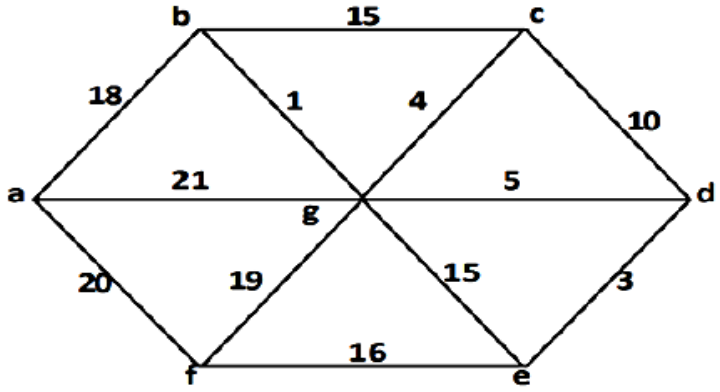
9. a) Prove that a given connected graph G is an Euler graph, if and only if all vertices of G are of even degree. 4 Marks

   b) Explain kruskal's algorithm and using the same, obtain the minimal spanning tree for the following weighted graph. 8 Marks



(OR)

10. Write Prim's algorithm and Kruskal's algorithm for finding the minimum spanning tree for a given graph. Apply both algorithms to the following graph and find the minimum spanning tree. 12 Marks



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Supplementary Examinations August - 2018

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. Discuss in detail the fixed-point representation. 12 Marks

(OR)

2. a) Define Boolean algebra and list the basic identities of Boolean algebra. 6 Marks
   b) Describe K- map and report on different approaches used in K- map for simplification of Boolean function. 6 Marks

UNIT-II

3. Create 16-to-1 line multiplexer with two 8-to-1 line multiplexers and one 2-to-1 line multiplexer. Use block diagrams for the three multiplexers. 12 Marks

(OR)

4. Construct the logic diagram of a 2-to-4 line decoder with only NOR gates. Include an enable input. 12 Marks

UNIT-III

5. a) Define the fields that we can found in the instruction format. Explain different instruction formats in detail. 6 Marks
   b) Define an interrupt. Explain different types of interrupts. 6 Marks

(OR)

6. Explain with examples.
   i) Implied Mode. 2 Marks
   ii) Immediate Mode. 2 Marks
   iii) Register Mode. 2 Marks
   iv) Register Indirect Mode. 3 Marks
   v) Direct Addressing Mode. 3 Marks

UNIT-IV

7. Construct the flowchart for computer operation. 12 Marks

(OR)

8. Match the instruction codes of a basic computer. 12 Marks

UNIT-V

9. Order the interrupts for data transfer. 12 Marks

(OR)

10. a) Judge the memory hierarchy with latest trends. 6 Marks
    b) Distinguish RAM and ROM chips with diagrams. 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Supplementary Examinations August - 2018

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. What is a process? Explain different process states. 12 Marks

(OR)

2. Define system call. Explain the various types of system calls. 12 Marks

UNIT-II

3. Differentiate Priority, Round-Robin Scheduling algorithms with examples. 12 Marks

(OR)

4. Consider the following five processes, with the length of the CPU burst time given in milliseconds. 12 Marks

Process	Burst time
P1	10
P2	29
P3	3
P4	7
P5	12

Consider the First Come First Serve (FCFS), Non Preemptive Shortest Job First (SJF), Round Robin(RR) (quantum=10ms) scheduling algorithms. Illustrate the scheduling using Gantt chart. Which algorithm will give the minimum average waiting time? Discuss.

UNIT-III

5. a) Explain about deadlocks and starvation. 4 Marks
   b) Elucidate about classic problems of synchronization. 8 Marks

(OR)

6. What judgment would you make about dead lock by using resource allocation algorithm? 12 Marks

UNIT-IV

7. a) What is swapping and what is its purpose? 6 Marks
   b) Compare and contrast paging and segmentation. 6 Marks

(OR)

8. Explain about Linux memory management. 12 Marks

UNIT-V

9. Discuss Access matrix, implementation of Access matrix with examples. 12 Marks

(OR)

10. Illustrate revocation of access rights, language based protection. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Supplementary Examinations August - 2018

PROGRAMMING IN C

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Write about the structure of **C** program with suitable example. 6 Marks
   b) Sketch the block diagram to create and run the **C** program in Turbo C. 6 Marks

(OR)

2. a) Code the variable declaration for each of the following: 4 Marks
   i) A character variable named option.
   ii) An integer variable, sum, initialized to 0.
   iii) A floating-point variable, product, initialized to 1.
   b) Identify the bugs in the following program and code the correct lines of code. 8 Marks

```
int main(void)
{
  // local declarartion
  a int;
  b:c:d char
  d,e,f double float;
  printf("The end of the program.");
  return 0;
}
```

UNIT-II

3. a) Code the transpose of a given **n x n** matrix **A** in Turbo C. 6 Marks
   b) Sketch the exit loop control statement with a suitable program. 6 Marks

(OR)

4. Illustrate swapping of two strings using pointers. Identify the string function which is available in **<string.h>** to find out the substring in the main string with a suitable example. 12 Marks

UNIT-III

5. a) Formulate **n^{th}** Fibonacci number generation using recursion. 6 Marks
   b) Define function and explain about system defined functions with suitable example. 6 Marks

(OR)

6. a) State which value is automatically assigned to those array elements that are not explicitly initialized with an example. 5 Marks
   b) State various types of functions used in **C**. 7 Marks

UNIT-IV

7. Categorize approaches that can be used to pass structures as function arguments. 12 Marks

(OR)

8. Make use of a structure called cricket that will describe the following information: 12 Marks

Player name
Team Name
Batting name

Using cricket, declare an array player with 50 elements and write a program to read the information about all the 50 elements and write a program to read the information about all the 50 players and print a team wise list containing names of players with their batting average.

UNIT-V

9. Implement command line arguments with a suitable example. Specify the description of arguments that can be passed to **main( )** with description. 12 Marks

(OR)

10. Express about the command line arguments and its usage. 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC16) Regular/Supplementary Examinations August - 2018

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 addition theorem of probability on any three events A, B and C. 6 Marks

   b) A business man goes to hotels X,Y and Z with 20%, 50% and 30% of the time respectively. It is known that 5%, 4%, 8% of the rooms in X, Y, Z hotels have faulty plumbing. What is the probability that business man's room having faulty plumbing is assigned to hotel Z? 6 Marks

(OR)

2. a) Give any two definitions of probability. State addition theorem of probability. 6 Marks

   b) A problem in statistics is given to three students A, B and C whose chances of solving the problem are 1/2, 1/3 and 1/4 respectively. What is the probability that the problem will be solved? 6 Marks

UNIT-II

3. a) One fifth percent of the blades produced by a blade manufacturing factory turnout to be defective. The blades are supplied in packets of 10. Use Poisson distribution to calculate the approximate number of packets containing: 6 Marks
   (i) No defective blade. (ii) One defective blade in a consignment of 10000.

   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
No. of defects	6	5	6	4	3	4	5	3	6	3	7	5	4	3	4	5	6	5	4	3	7

(OR)

4. a) Eight coins are thrown simultaneously. Find the chance of obtaining: 6 Marks
   (i) at least 6 heads. (ii) no heads. (iii) all heads.

   b) A manufacturer of cotter pins knows that 5% of his product is defective. If he sells cotter pins in boxes of 100 and guarantees that not more than 10 pins will be defective, what is the approximate probability that a box will fail to meet the guaranteed quality? 6 Marks

UNIT-III

5. a) Estimate the Blood Pressure (B.P) of a women of age 45 years from the following data which shows the ages (X) and systolic B.P (Y) of 12 women. Also whether the two variables ages (X) and B.P (Y) correlated? 6 Marks

Age (X)	56	42	72	36	63	47	55	49	38	42	68	60
B.P (Y)	147	125	160	118	149	128	150	145	115	140	152	155

   b) The two regression lines are having their means and standard deviations 31.6, 38 and 3.72, 6.31 and r = - 0.36. Find the two lines of regression. 6 Marks

(OR)

6. The linear regression lines are: 8X - 10Y + 66 = 0; 40X - 18 Y = 214 and V(X) = 9, then find the V(Y), the means of X and Y and also the coefficient of correlation between X and Y. 12 Marks

UNIT-IV

7. If the population is 3, 6, 9, 15, 27. 12 Marks
   i) List all possible samples of size 3 that can be taken without replacement from the finite population.
   ii) The mean of the population.
   iii) The standard deviation of the population.
   iv) Calculate the mean of the sampling distribution of means.
   v) The standard deviation of the sampling distribution of means.

(OR)

8. a) A cigarette manufacturing firm claims that its brand A of the cigarettes outsells its brand B by 8%. If it is found that 42 out of a sample of 200 smokers prefer brand A and 18 out of another random sample of 100 smokers prefer band B. Test whether the 8% difference is a valid claim (use 5%). 6 Marks

   b) In a sample of 1000 people in Maharashtra, 540 are rice eaters and the rest are wheat eaters. Can we assume that both rice and wheat are equally popular in this state at 1% LOS? 6 Marks

UNIT-V

9. a) A group of 11 rats fed on diet A and another group of 8 rats fed on a different diet B. Recorded the following increase in weight. 6 Marks

Diet-A	5	73	6	8	1	12	4	3	9	6	10
Diet-B	2	3	6	8	1	10	2	8	-	-	-

Find the variances are significantly different.

   b) Fit a Poisson distribution to the following data and test the goodness of fit. 6 Marks

x:	0	1	2	3	4	5	6
f:	275	72	30	7	5	2	1

(OR)

10. a) Two researchers adopted different sampling techniques while investigating some group of students to find the number of students falling in to different intelligence level. The results are as follows: 6 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? (Given 5% value of chi-square for 2 d.f. are 5.991 and 7.82).

   b) 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.O. The results are as follows: 6 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.

CODE No.:16MC20101 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC16) Regular/Supplementary Examinations August - 2018

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) Analyze the concepts of Class hierarchy and aggregation features of ER model with an example. 6 Marks
   b) Identify various database languages with suitable examples. 6 Marks

(OR)

2. a) Define DBMS. List any two advantages of DBMS. 4 Marks
   b) How would you classify that database systems are providing more advantages than file system? 8 Marks

UNIT-II

3. What inference can you make in converting an ER diagram into relational schema? Justify your answer with an example. 12 Marks

(OR)

4. What is a view? Write the syntax for creating and destroying a view with suitable example. 12 Marks

UNIT-III

5. Apply Aggregate and Arithmetic operations using SQL language with appropriate examples. 12 Marks

(OR)

6. Make use of Structured Query Language in solving the following with proper examples: 12 Marks
   i) Nested queries. ii) Joins. iii) Aggregate functions.

UNIT-IV

7. Elucidate on 2PL, Serializability and Recoverability 12 Marks

(OR)

8. Analyze the steps involved in recovering the system from system crash. 12 Marks

UNIT-V

9. Elaborate File organization and Indexing. Write in detail about index data structures. 12 Marks

(OR)

10. How the data is organized in a hash-based and tree-based indexing? Elaborate on hash-based indexing and tree-based indexing. 12 Marks

CODE No.:16MC20102 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC16) Regular/Supplementary Examinations August - 2018

DATA STRUCTURES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Define ADT. Explain about ADT implementations. 6 Marks
   b) Describe the different approaches to design an algorithm. 6 Marks

(OR)

2. a) Define the term algorithm and state the criteria the algorithm should satisfy. 4 Marks
   b) Design an algorithm to convert an infix expression to postfix expression. 8 Marks

UNIT-II

3. Explain the operations that can be performed on single linked list. 12 Marks

(OR)

4. What is a sparse matrix? Analyze the procedure to represent a sparse matrix using linked list representation. 12 Marks

UNIT-III

5. a) Apply binary search and find the average number of comparisons required to find an element 11, 15, 17, 19, 21, 25, 27, 29, 31. 4 Marks
   b) Implement quick sort algorithm for the following list of numbers. 4 Marks
   90, 77, 60, 99, 55, 88, 66.
   c) Compare efficiencies of quick sort and heap sort. 4 Marks

(OR)

6. Apply heap sort algorithm on the following elements stepwise. 12 Marks
   3, 5, 9, 7, 1, 4, 6, 8, 2.

UNIT-IV

7. What are AVL trees? Represent different rotations defined for AVL tree. Insert the following elements step by step in sequence into an empty AVL tree. 12 Marks
   15, 18, 20, 21, 28, 23, 30, 26.

(OR)

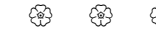
8. How to insert and delete a node from the binary search tree? 12 Marks

UNIT-V

9. a) Define graph. Explain the properties of graph. 6 Marks
   b) What is the difference between strongly connected graph and weakly connected graph? 6 Marks

(OR)

10. a) Explain the topological sort with an example. 8 Marks
    b) Differentiate BFS and DFS 4 Marks



CODE No.:16MC20103 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC16) Regular/Supplementary Examinations August - 2018

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Illustrate Nested and Inner classes with an example. 12 Marks

(OR)

2. a) Represent the structure of typical Java program and give the steps to execute it. 7 Marks
   b) Point out the usage of final keyword with suitable example. 5 Marks

UNIT-II

3. Outline various forms of interfaces and its implementation. 12 Marks

(OR)

4. Can you recall Interface? Point out extending interfaces with an example. 12 Marks

UNIT-III

5. What is the function of Vector class and its methods? Explain with an example. 12 Marks

(OR)

6. a) Write a java code for reading and writing the data onto the files using FileInputStream and FileOutputStream. 6 Marks
   b) Identify the importance of StringTokenizer class and illustrate with an example. 6 Marks

UNIT-IV

7. Discuss in detail about Interthread Communication with an example. 12 Marks

(OR)

8. Write a program to implement built in exceptions. 12 Marks

UNIT-V

9. Discuss the following: 12 Marks
   i) JFrame. ii) JWindow. iii) JTable.

(OR)

10. Define Applet. Design an Applet which accepts parameters. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC16) Regular/Supplementary Examinations August - 2018

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. What is usecase? Write about usecase specification with example. 12 Marks

(OR)

2. a) Elucidate the phases of the unified process with neat diagram. 6 Marks
   b) What are functional and non functional requirements in a pragmatic way? 6 Marks

UNIT-II

3. Identify challenges related to aesthetic, content architecture and navigations while designing Web Application. 12 Marks

(OR)

4. a) Justify modularity and refinement. 4 Marks
   b) Elucidate software architecture in detail. 8 Marks

UNIT-III

5. a) What is the necessity of unit testing? List all unit test considerations adopted for unit testing. 4 Marks
   b) How would you describe in detail about system testing? 8 Marks

(OR)

6. a) How would you narrate debugging process? 6 Marks
   b) How can we make use of content testing for web applications? 6 Marks

UNIT-IV

7. Discuss the need for change control in SCM and explain its impact on quality of software development. 12 Marks

(OR)

8. a) Emphasize SCM items with neat diagram. 6 Marks
   b) How would you show version control in SCM process? 6 Marks

UNIT-V

9. Elucidate risk identification mechanism in risk management. 12 Marks

(OR)

10. a) Find out challenges in Process based Project Estimation. 6 Marks
    b) Illustrate Process based Project Estimation with an example. 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC14) Supplementary Examinations January - 2018

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)	Discuss the applications and features of procedure oriented and object oriented programming.	6 Marks
	b)	Explain the JVM architecture.	6 Marks
		(OR)	
2	a)	Differentiate Selection and Looping statements using Java methods.	6 Marks
	b)	Write a Java program to arrange given names in ascending order.	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	a)	Explain about different forms of inheritance with necessary examples.	6 Marks
	b)	Explain about the usage of import statement with respect to package feature.	6 Marks
		(OR)	
6	a)	Write a program using Vector class to store list of names and add a method to sort them.	6 Marks
	b)	Give the syntax of interface definition and show how an interface can be extended and implemented.	6 Marks

UNIT-IV

7	a)	What is Serialization? Write a program with an example.	6 Marks
	b)	Discuss thread and daemon threads.	6 Marks
		(OR)	
8		Explain file operations in Java and write a program with suitable example.	12 Marks

UNIT-V

9	a)	Write about any two layout managers.	6 Marks
	b)	Explain about the following Events and corresponding listeners. i) ActionEvent. ii) AdjustmentEvent. iii) ItemEvent.	6 Marks
		(OR)	
10		Write a Java program to create a user feedback form containing appropriate fields and buttons using Swing classes.	12 Marks

CODE No.:16MC2BS01 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC16) Supplementary Examinations January - 2018

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) Find the mean of the probability distribution of the number of heads obtained in three flips of a balanced coin. 6 Marks

   b) For the continuous probability function $\mathbf{f(x) = K X^2 e^{-x}}$ where $\mathbf{X \geq 0}$, find: 6 Marks
   i) K ii) Mean iii) Variance.

(OR)

2. A random variable X has the following probability function 12 Marks

X	0	1	2	3	4	5	6	7
P(X)	0	K	2K	2K	3K	K^2	$2K^2$	$7K^2+ K$

   i) Determine K. ii) Evaluate P(X< 6), P(X≥6) and P(0≤X≤4).

   iii) If P(X≤ K) > $\frac{1}{2}$, find the minimum value of K.

   iv) Determine the distribution function of X. v) mean. vi) variance.

UNIT-II

3. a) The data given below are the number of defectives in 10 samples of 100 items each. Construct a P-chart and comment on result. 6 Marks

Sample No.	1	2	3	4	5	6	7	8	9	10
No. of defectives	6	16	7	3	8	12	7	11	11	4

   b) Construct C-chart for the number of defects from the following data: 6 Marks

Serial No. of carpet	1	2	3	4	5
No. of defects	5	4	3	2	6

(OR)

4. The data given below are the number of defectives in 10 samples of size 400 each. Construct a P-chart and NP-chart and comment on the result. 12 Marks

Sample No.	1	2	3	4	5	6	7	8	9	10
No. of defectives	15	12	4	26	15	9	19	9	14	17

UNIT-III

5. Obtain the rank correlation coefficient between the variables X and Y from the following pairs of the observed values. 12 Marks

X	50	55	65	50	55	60	50	65	70	75
Y	110	110	11	125	140	115	130	120	115	160

(OR)

6. a) The regression equations of two variables X and Y are X = 0.7Y + 5.2, Y = 0.3X + 2.8. Find the mean of the variables and coefficient of correlation between them. 6 Marks

   b) Consider the following data and find the correlation coefficient 'r'. 6 Marks

X :	-4	-3	-2	-1	0	1	2	3	4
Y :	0.1	2.5	3.4	3.9	4.1	3.8	3.5	2.8	0.3

UNIT-IV

7. a) The mean weekly sales of soap bars in departmental stores was 146.3 bars per store. After an advertising campaign the mean weekly sales in 22 stores for a typical week increased to 153.7 and showed a standard deviation of 17.2 . Was the advertising campaign successful? 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 favor of the proposal. Test the null hypothesis that proportions of men and women in favor of the proposal are same against that they are not, at 5% level. 6 Marks

(OR)

8. a) Explain one tailed and two tailed tests with corresponding critical values. 6 Marks

   b) A manufacturer claims that only 4% of his products are defective. A random sample of 500 were taken among which 100 were defective. Test the hypothesis at 0.05 level. 6 Marks

UNIT-V

9. a) Memory capacity of 10 students were tested before and after training. State whether the training was effective or not from the following scores. 6 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

   b) 4 coins were tossed 130 times and the following results were obtained. 6 Marks

No. of heads	0	1	2	3	4
Observed frequencies	17	52	54	31	6

   Use the assumption that coins are balanced, find the expected frequencies of 0, 1, 2, 3 or 4 heads and test the goodness of fit (at 5% LOS).

(OR)

10. a) The following are average weekly losses of worker hours due to accidents in 10 industrial plants before and after a certain safety program was put into operation: 6 Marks

Before	45	73	46	124	33	57	83	34	26	17
After	36	60	44	119	35	51	77	29	24	11

   Test whether the safety program is effective in reducing the number of accidents at the level of significance of 0.05

   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 stimulus will, in general be accompanied by an increase in blood pressure? (table value is 1.80 at 5% LOS). 6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC16) Supplementary Examinations January - 2018

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) Outline the architecture of DBMS and explain its components. 8 Marks
   b) List and identify the advantages of using database systems 4 Marks

(OR)

2. a) Define the terms entities, attributes and entity sets with suitable example. 8 Marks
   b) Name different kinds of data models used in relational database. 4 Marks

UNIT-II

3. a) Mention different attribute data types used in SQL. 4 Marks
   b) Create a table in SQL by specifying attribute constraints and attribute defaults. 8 Marks

(OR)

4. Construct an ER diagram for a University database. Assume your own entities (Minimum of 5 entities), attributes and relations. Explain in detail. 12 Marks

UNIT-III

5. Can you make a distinction between 3NF and BCNF? How will you analyze that a relation which is 3 NF but not in BCNF able to convert into BCNF? Justify your answer? 12 Marks

(OR)

6. Construct an SQL language for the following. 12 Marks
   i) Select clause. ii) Insert into clause.
   iii) Set operators. iv) Arithmetic operators.

UNIT-IV

7. Elaborate on anomalies caused due to interleaved execution of two transactions. 12 Marks

(OR)

8. Describe the following. 12 Marks
   i) Serializability. ii) Two-Phase Locking protocol.

UNIT-V

9. List out the characteristics of a B+ tree. Explain a dynamic index structure B+ tree. 12 Marks

(OR)

10. Write short notes on the following: 12 Marks
    i) RAID levels. ii) Data on external storage.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC16) Supplementary Examinations January - 2018

DATA STRUCTURES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Present a detailed note on Towers of Hanoi problem. 6 Marks
   b) Elucidate infix, prefix and postfix expressions with suitable examples. 6 Marks

(OR)

2. a) Describe the role of space complexity and time complexity in measuring the performance of a program. 4 Marks
   b) Write a 'C' program to evaluate postfix expression. 8 Marks

UNIT-II

3. a) Write the procedures to insert and delete an element from dequeue. 8 Marks
   b) Write about simulation. 4 Marks

(OR)

4. Explain various types of queues with suitable examples. 12 Marks

UNIT-III

5. Design an algorithm for Bubble sort and sort the following array using Bubble Sort: 87, 34, 44, 12, 86, 22, 63, 55. Also derive its time complexity. 12 Marks

(OR)

6. Identify whether the given element is in the list or not by using binary search technique and calculate its time complexity. 12 Marks

UNIT-IV

7. a) Construct a binary tree for **((6 + (3 – 2) * 5) ^ 2 + 3)**. 4 Marks
   b) Construct a binary tree from the traversal order given below: 8 Marks

Pre Order	A	B	D	E	F	C	G	H	L	J	K
In Order	D	B	F	E	A	G	C	L	J	H	K

(OR)

8. Define threaded binary tree. Explain right in and left in threaded binary trees. 12 Marks

UNIT-V

9. Define spanning tree of a graph. Write a 'C' program to implement Prim's algorithm. 12 Marks

(OR)

10. Derive Kruskal's algorithm to find out minimum cost spanning tree with an example. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC16) Supplementary Examinations January - 2018

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Design an algorithm that takes two String arguments and uses all the Boolean comparisons to compare the two Strings and print the results. For the = = and !=, also perform the equals( ) test. In main( ), call your function with some different String objects.	9 Marks
	b)	What will be the result of using "this" keyword?	3 Marks

(OR)

2.	a)	Explain the features of Java.	8 Marks
	b)	Highlight the use of finalize() method in a Java program with suitable example.	4 Marks

UNIT-II

3.		How to create Object Class in Java environment? Discuss on objects in Java with an example.	12 Marks

(OR)

4.	a)	What is package? Specify different access controls for packages in Java.	6 Marks
	b)	Illustrate the process of creating and importing package.	6 Marks

UNIT-III

5.		Elaborate the FileInputStream and FileOutputStream classes with examples	12 Marks

(OR)

6.	a)	Highlight the operations of Random Access File with appropriate syntax.	6 Marks
	b)	Distinguish Iterator, ListIterator and Enumeration Interfaces.	6 Marks

UNIT-IV

7.		Simulate the process of Thread Synchronization.	12 Marks

(OR)

8.	a)	Write a Java program to throw user defined exceptions.	6 Marks
	b)	What is the role of User defined exceptions? How it is different from pre-defined exceptions?	6 Marks

UNIT-V

9.		Apply AWT controls to create Buttons, Check Boxes and Lists.	12 Marks

(OR)

10.	a)	How would you explain the fundamentals of an applet with an applet generation?	6 Marks
	b)	What is an event? Discuss about Delegation Event model.	6 Marks

CODE No.:16MC20104 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC16) Supplementary Examinations January - 2018

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)	Elaborate importance of SDLC phases and discuss.	6 Marks
	b)	Compare software mythology with different perspectives.	6 Marks
		(OR)	
2.	a)	Define software. What domains of software application are available?	6 Marks
	b)	Construct neat diagram of generic process model and explain.	6 Marks

UNIT-II

3.	a)	Give brief description about design evaluation.	6 Marks
	b)	Mention few challenges in user interface design process.	6 Marks
		(OR)	
4.		Contrast the different types of architectural styles and explain in detail.	12 Marks

UNIT-III

5.		Emphasize software testing strategies for conventional software in a pragmatic way.	12 Marks
		(OR)	
6.	a)	Write about configuration testing for web applications.	5 Marks
	b)	Illustrate quality, quality control and quality assurance with suitable example.	7 Marks

UNIT-IV

7.	a)	Describe object oriented metrics in software measurement.	5 Marks
	b)	Adapt use case oriented metrics with example.	7 Marks
		(OR)	
8.		Elucidate the collection subsystem, management subsystem and publishing subsystem in content management.	12 Marks

UNIT-V

9.		Explain the functionality of Risk Projection in detail.	12 Marks
		(OR)	
10.	a)	What way the use cases will be useful in estimation of project?	6 Marks
	b)	Illustrate use case based project estimation with an example.	6 Marks

CODE No.:16MC3BS01 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC16) Regular Examinations January - 2018

OPERATIONS RESEARCH

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Elucidate the procedure of simplex method. CO1 6 Marks

   b) Solve the following LPP using graphical method. CO3 6 Marks

$$\text{Max } Z = 100X_1 + 40X_2$$
$$\text{subject to } 5X_1 + 2X_2 \leq 1000$$
$$3X_1 + 2X_2 \leq 900$$
$$X_1 + 2X_2 \leq 500$$
$$\text{and } X_1, X_2 \geq 0$$

(OR)

2. a) Classify the models in Operations Research. CO1 6 Marks

   b) Solve the following Linear Programming Problem by graphical method. CO3 6 Marks

$$\text{Minimize } Z = 20X_1 + 10X_2$$
$$\text{Subject to } X_1 + 2X_2 \leq 40$$
$$3X_1 + X_2 \geq 30$$
$$4X_1 + 3X_2 \geq 60$$
$$X_1, X_2 \geq 0$$

UNIT-II

3. There are 5 jobs to be assigned on 5 machines and associated cost matrix is as follows. CO3 12 Marks

Jobs \ Machines	1	2	3	4	5
A	11	17	8	16	20
B	9	7	12	6	15
C	13	16	15	12	16
D	21	24	17	28	26
E	14	10	12	11	15

Find the optimal assignment and associated cost using the assignment technique.

(OR)

4. Solve the following Assignment Problem. CO3 12 Marks

Machines \ Jobs	I	II	III	IV	V
A	30	25	33	35	36
B	23	29	38	23	26
C	30	27	22	22	22
D	25	31	29	27	32
E	27	29	30	24	32

UNIT-III

5. The Hi-tech Publishers have to publish 8 text books for which it spends the time in days for DTP preparation and printing are estimated as follows. Find the sequence to take up these books to minimize total publishing time and also find the idle time of DTP operator and printing operator — CO2 — 12 Marks

Books	A	B	C	D	E	F	G	H
DTP	14	26	17	11	9	26	18	15
Printing	21	15	16	21	22	12	13	25

(OR)

6. A machine operator has to perform three operations: turning, threading and knurling on a number of different jobs. The time required to perform these operations (in minutes) for each jobs is known. Determine the order in which the jobs should be processed in order to minimize the total time required to turn out all the jobs. — CO3 — 12 Marks

Job	Time for Turning (in minutes)	Time for Threading (minutes)	Time for Knurling (minutes)
1	6	16	26
2	24	12	28
3	10	8	18
4	4	12	24
5	18	6	16
6	22	2	26

UNIT-IV

7. Consider an inventory situation in a manufacturing concern. If the number of sales per day is Poisson with mean 5 then generate 30 days of sales by Monte-Carlo method. — CO4 — 12 Marks

(OR)

8. Use the principle of dominance to simplify rectangular game with the following payoff and solve it graphically. — CO2 — 12 Marks

		Player-B			
		I	II	III	IV
Player-A	I	18	4	6	4
	II	6	2	13	7
	III	11	5	17	3
	IV	7	6	12	2

UNIT-V

9. A project schedule has the following characteristics: — CO5 — 12 Marks

Activity	1-2	1-4	1-7	2-3	3-6	4-5	4-8	5-6	6-9	7-8	8-9
Time	2	2	1	4	1	5	8	4	3	3	5

Construct the PERT network. Find critical path and time duration of the project.

(OR)

10. An automobile company uses 6000 pistons per year. The company can manufacture the pistons at the rate of 36000 units per year with a set-up cost of Rs.2000. The cost of holding inventory per year is estimated to be Rs.8 per unit and unit cost is Rs.40. If the company has a provision to allow shortage at the cost of Rs.20 per unit per year; find — CO3 — 12 Marks

i) Optimal lot size. ii) Number of shortages.

iii) Manufacturing time. iv) Time between set-ups.

CODE No.:16MC3HS01 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC16) Regular Examinations January - 2018

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.	"Managerial skills are important to an effective manager". Elaborate.	CO5	12 Marks
	(OR)		
2.	"Management is what manager does". Explain.	CO3	12 Marks

UNIT-II

3.	List out and explain the characteristics of organizational behavior.	CO1	12 Marks
	(OR)		
4.	Define organizational behavior and discuss its concepts and meaning.	CO1	12 Marks

UNIT-III

5.	Elucidate the factors affecting leadership.	CO2	12 Marks
	(OR)		
6.	List out and explain the differences between leadership and motivation.	CO4	12 Marks

UNIT-IV

7.	Define job analysis and write its nature.	CO4	12 Marks
	(OR)		
8.	Describe the process of job analysis.	CO1	12 Marks

UNIT-V

9.	Describe, how training helps the individual in building his carrier.	CO2	12 Marks
	(OR)		
10.	How business process outsourcing will help in recruitment?	CO4	12 Marks

CODE No.:16MC30101 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC16) Regular Examinations January - 2018

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.		Define a Network. Discuss the uses of Networks.	CO1	12 Marks
		(OR)		
2.		Define Multiplexing. Memorize and identify various types of Multiplexing.	CO1	12 Marks

UNIT-II

3.		Illustrate error detection mechanism with an example.	CO3	12 Marks
		(OR)		
4.		Demonstrate the implementation of elementary data link protocols.	CO3	12 Marks

UNIT-III

5.	a)	Compare IPV4 and IPV6 protocols.	CO2	6 Marks
	b)	Describe Flooding principle and give its advantages and applications.	CO2	6 Marks
		(OR)		
6.	a)	Apply least-cost-path routing algorithm to find a shortest path between source and destination with an example.	CO4	7 Marks
	b)	Explain various congestion prevention policies.	CO1	5 Marks

UNIT-IV

7.		Draw TCP connection management finite state machine diagram and explain each state.	CO2	12 Marks
		(OR)		
8.		Cite various elements of Transport protocols.	CO2	12 Marks

UNIT-V

9.		Discuss the following: i) The DNS Name Space. ii) Name Servers .	CO2	12 Marks
		(OR)		
10.	a)	Summarize the complaints associated with an electronic mail in the early days.	CO3	5 Marks
	b)	Write short notes on the Resource Records of Domain Name System.	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC16) Regular Examinations - 2018

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)	What is data mart? Discuss various types of data marts with example.	CO1	6 Marks
	b)	Distinguish between OLTP and data warehouse system.	CO2	6 Marks
		(OR)		
2.	a)	Define metadata and state its importance.	CO1	4 Marks
	b)	With a neat sketch, explain the architecture of data warehouse with its components.	CO3	8 Marks

UNIT-II

3.	a)	Elaborate on logical steps needed to implement a data warehouse.	CO1	8 Marks
	b)	Why data warehouse is required? Explain the benefits of using data warehouse.	CO1	4 Marks
		(OR)		
4.		Elucidate various schemas for multidimensional databases. Explain any two schemas with suitable example.	CO2	12 Marks

UNIT-III

5.		Perform preprocessing of data sets by applying a variety of data transformation techniques.	CO5	12 Marks
		(OR)		
6.	a)	Determine data transformation techniques for preprocessing suitable datasets.	CO5	6 Marks
	b)	What do you understand by data cleaning? Choose various approaches to fill missing values for a given dataset.	CO5	6 Marks

UNIT-IV

7.		Apply K-Means and K-Medoid partitioning methods to cluster the data and discuss its merits and demerits.	CO3	12 Marks
		(OR)		
8.		Enunciate classification. How classification is performed using decision tree induction? Explain with an example.	CO2	12 Marks

UNIT-V

9.	a)	How data mining is applied on Telecommunication industry application?	CO5	6 Marks
	b)	Write brief note on outlier analysis.	CO1	6 Marks
		(OR)		
10.		Apply various methods and approaches for mining the text database.	CO4	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC16) Regular Examinations January - 2018

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)	Discuss the principles of modeling.	CO1	6 Marks
	b)	Define relationship. Point out the four adornments that apply to an association and dependency.	CO2	6 Marks
		(OR)		
2.	a)	Elucidate the extensibility mechanisms in UML.	CO2	6 Marks
	b)	Enumerate mechanisms to model Structural relationships.	CO3	6 Marks

UNIT-II

3.	a)	Enumerate the steps to model webs of relationships.	CO2	8 Marks
	b)	Contrast simple aggregation with composite aggregation. What is association class?	CO4	4 Marks
		(OR)		
4.	a)	Contrast object diagram with class diagram.	CO4	6 Marks
	b)	Represent advanced classes and advanced relationships with suitable example.	CO3	6 Marks

UNIT-III

5.	a)	Distinguish between sequence diagram and collaboration diagram.	CO2	4 Marks
	b)	Draw a use case diagram to model the behavior of a cellular phone. Explain briefly.	CO5	8 Marks
		(OR)		
6.	a)	Enumerate the steps to model flows of control by organization.	CO2	6 Marks
	b)	Explain the various relationships possible among use cases. Illustrate in UML notation.	CO5	6 Marks

UNIT-IV

7.	a)	What are the contents and common uses of activity diagrams?	CO1	6 Marks
	b)	Explain the following parts of a transition i) Event Trigger ii) Guard Condition	CO1	6 Marks
		(OR)		
8.	a)	What are swimlanes? Explain with an activity diagram.	CO1	6 Marks
	b)	Enumerate steps to model life time of an object with an example.	CO2	6 Marks

UNIT-V

9.	a)	Draw a class diagram showing architectural overview of the library system.	CO4	6 Marks
	b)	Design “Issuing of a book” operation using UML collaboration diagram notations.	CO5	6 Marks
		(OR)		
10.		Demonstrate various objects participating in the library information system. Explain the object diagram that is associated with various interactions with a neat diagram.	CO5	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC16) Regular Examinations August - 2018

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)	Justify advanced analytics for big data with examples.	CO2	6 Marks
	b)	How to modify business intelligence products to handle big data?	CO3	6 Marks
		(OR)		
2.		Explain the following: i) Volunteer computing. ii) Grid computing.	CO1	12 Marks

UNIT-II

3.		Define serialization. What is desirable for an RPC serialization format?	CO1	12 Marks
		(OR)		
4.		List out various Hadoop compression codes for compression and decompression.	CO1	12 Marks

UNIT-III

5.		Write short notes on the following. i) Combined resources. ii) Variable expansion.	CO1	12 Marks
		(OR)		
6.		Sketch a design to run a map reduce job in Hadoop environment.	CO3	12 Marks

UNIT-IV

7.		Elucidate counters. Explain in brief built-in counters and task counters.	CO1	12 Marks
		(OR)		
8.	a)	List out various map reduce library classes with necessary implementation in Hadoop.	CO3	6 Marks
	b)	Instead of serializing side data in the job configuration, how to adopt the Hadoops disturbed Cache mechanism.	CO2	6 Marks

UNIT-V

9.	a)	Invoke help () in R language for any specified data structure of R programming.	CO5	4 Marks
	b)	Implement vectorized operation in the R programming language.	CO5	8 Marks
		(OR)		
10.		Create a matrix and perform general matrix operations on it in R programming	CO5	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC16) Regular Examinations August - 2018

LINUX PROGRAMMING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Describe vi-editor commands with examples.	CO3	6 Marks
	b)	Sketch the block diagram of Linux system kernel. Explain various components.	CO1	6 Marks

(OR)

2.		Mention the significance of the following commands: i) ls - ld ii) ls - l	CO1	12 Marks

UNIT-II

3.		Generate a shell script to print the details of the user login information.	CO1	12 Marks

(OR)

4.		Perform arithmetic operations in a shell script (small calculator) that adds, subtracts, multiplies and divides the given two integers. There are two division options: one returns the quotient and the other returns reminder. The script requires 3 arguments: The operation to be used and two integer numbers. The options are add (-a), subtract (-s), multiply (-m), quotient (-c) and reminder (-r).	CO4	12 Marks

UNIT-III

5.		Write the syntax for: i) rmdir ii) chdir iii) mkdir	CO1	12 Marks

(OR)

6.		Develop a C program for **ulink( )** with example.	CO3	12 Marks

UNIT-IV

7.		Generate C program to create a child process and allow the parent to display “Hello” and the child to display “Welcome” on the screen.	CO4	12 Marks

(OR)

8.		Codify C program to illustrate orphan process.	CO4	12 Marks

UNIT-V

9.		Implement a program to transfer a large amount of data between two processes using: i) Pipes ii) Message queues.	CO5	12 Marks

(OR)

10.		Demonstrate the functionality provided by system V IPC semaphore mechanism.	CO5	12 Marks

CODE No.:16MC40103 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC16) Regular Examinations August - 2018

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.		Define CSS. Specify various types of CSS with suitable examples.	CO1	12 Marks
		(OR)		
2.	a)	Explain the steps to create image as hyperlink with an example.	CO1	6 Marks
	b)	Implement alert and prompt methods of window object in java script.	CO5	6 Marks

UNIT-II

3.	a)	Write short notes on the following. i) XPath. ii) XML CDATA.	CO1	6 Marks
	b)	Differentiate between internal and external DTD with an example.	CO2	6 Marks
		(OR)		
4.		Create an XML document to store EmpID, EmpName, Address and DOB details. Implement a DTD to validate the document.	CO5	12 Marks

UNIT-III

5.		Define JDBC. Analyze different types of JDBC drivers with neat diagrams.	CO2	12 Marks
		(OR)		
6.		Describe about Servlet and develop a simple Servlet that reads three parameters from the form data.	CO3	12 Marks

UNIT-IV

7.		Analyze the usage of scripting tags with suitable examples.	CO2	12 Marks
		(OR)		
8.		Analyze the usage of implicit objects in JSP with suitable examples.	CO2	12 Marks

UNIT-V

9.		Codify the usage of built-in functions in PHP with suitable examples.	CO4	12 Marks
		(OR)		
10.	a)	Write a PHP program to modify a record into MYSQL database table.	CO4	6 Marks
	b)	Identify and explain the commonly used attributes of cookie in PHP.	CO2	6 Marks

CODE No.:16MC40105 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC16) Regular Examinations August - 2018

INTERNET OF THINGS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		What does an IoT system comprises? Represent various levels and deployment templates of an IoT system with a neat sketch.	CO2	12 Marks
		(OR)		
2.		Distinguish between IoT and M2M.	CO2	12 Marks

UNIT-II

3.	a)	What is an IoT device? How would you represent basic building blocks of an IoT device?	CO2	8 Marks
	b)	Write about controlling LED with Raspberry Pi.	CO1	4 Marks
		(OR)		
4.	a)	What choice would you have made to improve the health and fitness monitoring? Discuss about the wearable electronics.	CO4	8 Marks
	b)	How would you compare the specifications of Arduino Due with the Raspberry Pi model B?	CO5	4 Marks

UNIT-III

5.	a)	Describe the need for IoT systems management.	CO2	6 Marks
	b)	Discuss TCP and UDP ports with suitable example.	CO2	6 Marks
		(OR)		
6.	a)	State SNMP protocol. Which limitations make SNMP unsuitable for IoT systems?	CO4	6 Marks
	b)	List the steps for IoT device management with NETCONF-YANG.	CO2	6 Marks

UNIT-IV

7.	a)	How would you apply the purpose and requirements specification of IoT design methodology?	CO3	6 Marks
	b)	Mention the WAMP protocol interactions between the peers and also the commands used for installing AutoBahn.	CO2	6 Marks
		(OR)		
8.		Illustrate the WAMP-AutoBahn in providing services for developing IoT solutions.	CO3	12 Marks

UNIT-V

9.	a)	With a neat sketch, compare and contrast Hadoop 1.x and 2.x architectures.	CO4	6 Marks
	b)	Write about setting up Hadoop cluster with chef.	CO6	6 Marks
		(OR)		
10.		Discuss about Apache Storm framework for distributed and fault-tolerant real-time computation.	CO2	12 Marks

CODE No.:16MC40108 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC16) Regular Examinations August - 2018

SOFTWARE PROJECT MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	How can good teams be built? How can you continue to have a team with those woks done effectively and efficiently?	CO2	6 Marks
	b)	Write about pragmatic software cost estimation.	CO1	6 Marks
		(OR)		
2.	a)	Describe the waterfall model in practice with neat diagram.	CO1	6 Marks
	b)	Write about pragmatic cost estimation.	CO1	6 Marks

UNIT-II

3.		Elaborate on Inception and Construction life cycle phase activities.	CO1	12 Marks
		(OR)		
4.	a)	What are engineering stage phases? Explain.	CO1	7 Marks
	b)	Discuss about management artifacts.	CO1	5 Marks

UNIT-III

5.	a)	Outline the information structure of Work Breakdown Structure.	CO1	6 Marks
	b)	Illustrate periodic status assessments of a software development project.	CO3	6 Marks
		(OR)		
6.	a)	Use appropriate techniques for effective cost and schedule estimation of a software project.	CO5	7 Marks
	b)	Identify various minor milestones required to provide checkpoint of the process	CO2	5 Marks

UNIT-IV

7.		Illustrate the evolution of organizations with a diagram.	CO3	12 Marks
		(OR)		
8.		Write short notes on: i) Roundtrip Engineering. ii) Change Management.	CO1	12 Marks

UNIT-V

9.		Distinguish various culture shifts that are necessary to transition successfully from conventional practice to a modern software management process.	CO2	12 Marks
		(OR)		
10.		Investigate how the metrics are classified into management and quality indicators? Mention the core metrics under each category.	CO4	12 Marks

CODE No.:14MC40101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC14) Supplementary Examinations November - 2017

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	a)	Define MIS. Explain the functions of MIS.	6 Marks
	b)	Briefly explain about development of Organizational theory.	6 Marks
		(OR)	
2		Write a detailed note on the system view of business in MIS.	12 Marks

UNIT-II

3		Write a short note on Basic Information Systems.	12 Marks
		(OR)	
4		What are MIS management issues? Explain about decision making and MIS.	12 Marks

UNIT-III

5		Write a note on how to determine information needs, information sources and the preparation of conceptual design report.	12 Marks
		(OR)	
6	a)	Explain the dominant and trade-off criteria in detailed system design of MIS.	6 Marks
	b)	Briefly explain about Inputs, Outputs, Processing and Early system testing of MIS detailed design.	6 Marks

UNIT-IV

7		Explain the Gantt charts of MIS implementation. And 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		Explain about fundamental weakness in MIS development.	12 Marks
		(OR)	
10	a)	Discuss about the alternative assignment for MIS function.	6 Marks
	b)	Discuss about the issues involved in setting the Project and System objectives.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. V Semester (SVEC14) Regular/Supplementary Examinations November - 2017

INFORMATION SECURITY

[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) A bank is performing all its financial transactions over the Internet. What kind of security is required? Illustrate with any example bank. 6 Marks

b) Describe the model for Network Security with a neat diagram. 6 Marks

(OR)

2 a) Explain three substitution techniques with example in each. 6 Marks

b) Using this Playfair matrix : 6 Marks

M	F	H	I/J	K
U	N	O	P	Q
Z	V	W	X	Y
E	L	A	R	G
D	S	T	B	C

Encrypt this Message: 'Must see you over Cadogan West. Coming at once'.

UNIT-II

3 Explain AES algorithm. 12 Marks

(OR)

4 a) In a public key system using RSA, you intercept the cipher text C =10 sent to a user whose public key is e = 5, n = 35. What is the plain text M? 6 Marks

b) Compare link encryption with end to end encryption. 6 Marks

UNIT-III

5 a) Explain Message Authentication requirements. What are the attacks related to message communication? 6 Marks

b) What are the situations in which message authentication code is used and draw the TCP segment with its explanation. 6 Marks

(OR)

6 a) Explain the digital signatures with a real time example and state its merits and demerits. 6 Marks

b) What problem was Kerberos designed to address? What improvements are made in Kerberos V5 over Kerberos V4? 6 Marks

UNIT-IV

7 a) List and explain the types of messages in PGP and their purposes. 6 Marks

b) Explain the MIME content types. 6 Marks

(OR)

8 a) Give examples of IP security applications and its services. 6 Marks

b) Explain IP security architecture and also explain basic combinations of security associations with a neat diagram. 6 Marks

UNIT-V

9 a) Explain the operation of SSL Handshake Protocol. 6 Marks

b) Write short notes on viruses. 6 Marks

(OR)

10 Explain in detail about Secure Electronic Transaction. 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC14) Regular/Supplementary Examinations November - 2017

SOFTWARE TESTING

[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 various types of risks identified during software development process.	6 Marks
	b)	Classify product risk and programmer's risk with examples.	6 Marks
		(OR)	
2	a)	Write the differences between execution and non-execution based testing. Give suitable examples.	6 Marks
	b)	Suggest suitable measures for monitoring tester productivity and testing costs.	6 Marks

UNIT-II

3	a)	Explain about equivalence class testing with examples.	6 Marks
	b)	Explain about state-table-based testing.	6 Marks
		(OR)	
4	a)	Differentiate between primary and secondary mutants.	5 Marks
	b)	Write about decision table based testing.	7 Marks

UNIT-III

5		Explain the types of structural system testing during implementation with examples.	12 Marks
		(OR)	
6	a)	Create a test strategy for any real-time application identifying the various test factors and its techniques.	6 Marks
	b)	What is the role of testing tools in software field? How are tools selected and used?	6 Marks

UNIT-IV

7	a)	Discuss about Object-oriented technology and issues on Object-oriented testing.	6 Marks
	b)	Write about integrated testing.	6 Marks
		(OR)	
8	a)	Discuss about the challenges in testing for Web-based software.	8 Marks
	b)	Write about “Testing an Application using QTP”.	4 Marks

UNIT-V

9	a)	Differentiate between progressive and regressive testing.	4 Marks
	b)	Write about regression test prioritization.	4 Marks
	c)	Write about the objectives of the regression testing.	4 Marks
		(OR)	
10		Write about the following testing tools:	
		i) Load Runner	6 Marks
		ii) Win Runner	6 Marks

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CODE No.:14MC50103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC14) Regular/Supplementary Examinations November - 2017

CLOUD COMPUTING

[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 is meant by guest operating system in Virtualization? Highlight the key benefits and objectives of Virtualization.	12 Marks
		(OR)	
2		Explain the following Virtualization techniques in detail.	
		i) VMware Workstation.	6 Marks
		ii) Microsoft Hyper-V.	6 Marks

UNIT-II

3		Define Cloud Computing. Describe the different types of Cloud with a neat diagram.	12 Marks
		(OR)	
4		What is NIST model in Cloud Computing? Elaborate the architecture of NIST model with a neat diagram.	12 Marks

UNIT-III

5	a)	Illustrate Google Cloud model in detail.	8 Marks
	b)	Discuss simple Cloud API.	4 Marks
		(OR)	
6		Discuss the role of load balancing in Clouds. Explain the instance types of capacity planning in detail.	12 Marks

UNIT-IV

7	a)	Explain about Google app engine.	6 Marks
	b)	What are the features of Amazon simple DB?	6 Marks
		(OR)	
8	a)	Discuss about Amazon web service components and services.	6 Marks
	b)	Explain various Amazon storage systems.	6 Marks

UNIT-V

9	a)	Give details about the DMTF Cloud management standards.	6 Marks
	b)	Write about the Identity protocol standards in Clouds.	6 Marks
		(OR)	
10	a)	Discuss about the Windows Azure Identity standards.	6 Marks
	b)	Give details about the Life Cycle Management (LCM) of Cloud.	6 Marks

CODE No.:14MC50104 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC14) Regular Examinations November - 2017

MOBILE APPLICATION DEVELOPMENT

[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 Microwave Technology.	6 Marks
	b)	Describe multiple MIDlets in a MIDlet Suite.	6 Marks
		(OR)	
2	a)	Explain about various personal Digital Assistance, give their examples.	6 Marks
	b)	Discuss J2ME wireless Toolkit.	6 Marks

UNIT-II

3		What is an Interface? Explain J2ME user Interface.	12 Marks
		(OR)	
4		Define display class and command class. Explain with examples.	12 Marks

UNIT-III

5		What is a clipping region? Explain various types of clipping regions.	12 Marks
		(OR)	
6		With suitable examples, describe canvas class.	12 Marks

UNIT-IV

7		Describe database schema with suitable examples.	12 Marks
		(OR)	
8	a)	What is JDBC? How database connection is established with JDBC and ODBC.	6 Marks
	b)	Explain transaction processing.	6 Marks

UNIT-V

9		How data is inserted in database tables in embedded SQL. Explain with an example.	12 Marks
		(OR)	
10		Classify connections and streams with suitable examples.	12 Marks

CODE No.:14MC50108 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC14) Regular/Supplementary Examinations November - 2017

BUSINESS INTELLIGENCE

[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 major trends that affect managerial decision-making.	6 Marks
	b)	Briefly describe the need for computerized support for decision-making	6 Marks
		(OR)	
2		Describe the different categories of models.	12 Marks

UNIT-II

3		Draw a schematic view of Decision Support Systems (DSS) with explanation for each and every component of DSS.	12 Marks
		(OR)	
4		Represent the general structure of quantitative model which includes the components and explain each component in brief.	12 Marks

UNIT-III

5	a)	Specify the most popular application areas of text mining.	6 Marks
	b)	Elucidate Natural Language Processing (NLP) and specify few challenges commonly associated with the implementation of NLP.	6 Marks
		(OR)	
6		Explain the following applications in Text mining: i) Marketing applications. ii) Biomedical applications. iii) Academic applications.	12 Marks

UNIT-IV

7		Explain Balanced Score Card (BSC) performance management system in detail.	12 Marks
		(OR)	
8	a)	Define knowledge management and describe its purpose.	8 Marks
	b)	Identify the characteristics of learning organizations.	4 Marks

UNIT-V

9		Describe the reasoning procedures of forward chaining and backward chaining.	12 Marks
		(OR)	
10	a)	Define fuzzy logic and describe its characteristics.	6 Marks
	b)	What is Support Vector machine? How does it work?	6 Marks

CODE No.:10MC50108 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Supplementary Examinations August - 2018

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. What is application virtualization? What do you mean by virtual bubbles? What are the benefits offered by application virtualization to organizations?

3. What are the problems users may face while installing newest version of **.**net framework? Explain how **.**net framework virtualization helps in solving the problems.

4. Define virtualization and why we need virtualizes for cloud computing.

5. Describe the cloud application architectures and cloud infrastructure model.

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. Explain and elaborate the process of starting a virtual server with encrypted file systems with suitable diagram.

8. Why scaling a cloud infrastructure is important? What are the ways to minimize the impact of load? Elaborate.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations March - 2018

APPLIED MATHEMATICS

[Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Create the canonical basis for $A=\begin{pmatrix} 3 & 2 & 0 & 1 \\ 0 & 3 & 0 & 0 \\ 0 & 0 & 3 & -1 \\ 0 & 0 & 0 & 3 \end{pmatrix}$. CO3 12 Marks

(OR)

2. a) Construct QR factorization of $A = \begin{pmatrix} 1 & 3 & 3 \\ 2 & 3 & 0 \\ 2 & 0 & 3 \end{pmatrix}$. CO3 6 Marks

b) Describe the singular value decomposition of $A = \begin{pmatrix} 2 & -1 \\ -1 & 1 \\ 4 & -3 \end{pmatrix}$. CO2 6 Marks

UNIT-II

3. Define the functional and extremal. Evaluate the boundary value problem $y'' + y + x = 0$ $(0 \le x \le 1)$, y (0) = y (1) =0 using Rayleigh Ritz method. CO2 12 Marks

(OR)

4. Evaluate the extremal of the functional $f(y(x),z(x))=\int_0^{\frac{\Pi}{2}}((y')^2 + (z')^2 + 2yz)dx$ satisfying $y(0) = 0$, $y(\frac{\Pi}{2}) = 1$, $z(0) = 0$, $z(\frac{\Pi}{2}) = 1$. CO2 12 Marks

UNIT-III

5. a) Find the moment generating function, mean and variance of the exponential distribution. CO2 6 Marks

b) Given the following probability distribution of 'X', compute E(X), $E(X^2)$ and $E(2X \pm 3)$ CO3 6 Marks

(OR)

6. a) If X is a Poisson variate P (X = 2) = 9P(X = 4) + 90P(X = 6). Find the CO2 6 Marks

i) mean of x ii) variance of x.

b) Define uniform distribution. A random variable 'x' has a uniform distribution over (-4, 4). Compute P(|X|<2) CO2 6 Marks

where $f(x) = \begin{cases} 1/8, & -4 < x < 4 \\ 0, & \text{otherwise} \end{cases}$

UNIT-IV

7. Solve the following LPP by Simplex method — CO4 — 12 Marks

Maximize $z = 3x_1 + 2x_2$.

Subject to the constraints $x_1 + x_2 \leq 4$, $x_1 - x_2 \leq 2$ and $x_1, x_2 \geq 0$

(OR)

8. a) A manufacturer has two products P_1 and P_2 both of which are produced in two steps by machines M_1 and M_2. The process time per hundred for the products on the machines are — CO4 — 6 Marks

	M_1	M_2	Contribution (per 100 units)
P_1	4	5	10
P_2	5	2	2

The manufacturer is in a market upswing and sell as much as he can produce both products. Formulate the problem LP model and determine optimum product mix.

b) Using Graphical method, solve the following LPP. — CO3 — 6 Marks

Maximize $Z = 2X_1 + 3X_2$

Subject to $X_1 - X_2 \leq 2$

$X_1 + X_2 \geq 4$

$X_1, X_2 \geq 0$

UNIT-V

9. A square plates is bounded by $X = 0$, $Y = 0$, $X = 20$ and $Y = 10$ its faces are insulated. The temperature along the upper horizontal edge is given by $U(x,20) = x(20 - x)$ then $0 < x < 20$ while other three edges are kept at zero degree Celsius. Find the steady state temperature in the plate. — CO4 — 12 Marks

(OR)

10. A string is fixed two end points x = 0 and x = L, motion is started by displaying the string in to the form $y = k(Lx - x^2)$ from which it is released at time T = 0. Find the displacement of any point on the string at a distance of 'x' from one end at time T. — CO2 — 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

ADVANCED COMPUTER NETWORKS

[Computer Science, Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is the difference between a host and an end system?	4 Marks
	b)	Explain different types of end systems.	8 Marks
		(OR)	
2.	a)	Explain ATM cell header format.	6 Marks
	b)	Compare connectionless and connection-oriented communication.	6 Marks

UNIT-II

3.	a)	Discuss least-cost-path routing algorithms.	6 Marks
	b)	Compare Intra- domain and Inter-domain routing protocols.	6 Marks
		(OR)	
4.	a)	Sketch the Ethernet frame format.	6 Marks
	b)	List and explain the fields of Ethernet frame.	6 Marks

UNIT-III

5.	a)	Describe the sequence of events in FTP for retrieving a list of items in a directory.	8 Marks
	b)	List and explain data formatting commands in FTP.	4 Marks
		(OR)	
6.	a)	Explain why the client issues an active open for the control connection and a passive open for the data connection.	6 Marks
	b)	Explain why FTP does not have a message format.	6 Marks

UNIT-IV

7.	a)	Sketch the IEEE 802.11 MAC frame and explain various fields.	8 Marks
	b)	Describe Wi-Fi technology and 802.11.	4 Marks
		(OR)	
8.		Explain about optical routers in detail.	12 Marks

UNIT-V

9.	a)	What are the advantages of MANETS and wireless sensor networks integrated with IPv6?	6 Marks
	b)	Compare MANET and wireless sensor network.	6 Marks
		(OR)	
10.	a)	Discuss the differences in topology reorganization in DSDV and CGSR routing protocols.	6 Marks
	b)	How is the cluster-head selected in the CGSR protocol? In the CGSR protocol, the resources of the node chosen as cluster-head get drained very quickly, more rapidly than the other nodes in the cluster. How can this problem be overcome?	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

ADVANCED DATABASE MANAGEMENT SYSTEMS

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain about the relationship types of Degree Higher than Two.	6 Marks
	b)	List out the key constraints used in the ER-Model.	6 Marks
		(OR)	
2.	a)	Breakdown an ER diagram for a COMPANY Database.	4 Marks
	b)	List out the naming conventions and design issues of a Database.	8 Marks

UNIT-II

3.	a)	Identify the languages used for the Object-Relational Databases.	6 Marks
	b)	Why XML is important in Databases? Write the Syntax for the DTD in XML.	6 Marks
		(OR)	
4.	a)	Define a Schema and explain how the Schema is important in the Databases.	6 Marks
	b)	Outline the constraints that are applicable on the Schema definition of a Database.	6 Marks

UNIT-III

5.	a)	Write a short notes on: i) Primary versus secondary. ii) Clustered and unclustered.	8 Marks
	b)	Explain data mirroring with block stripping in detail.	4 Marks
		(OR)	
6.	a)	Summarize the new storage systems and explain about how the file records are placed on to the disk.	6 Marks
	b)	List the other primary file organizations used.	6 Marks

UNIT-IV

7.	a)	Write short notes on primary copy 2PL and distributed 2PL algorithms.	6 Marks
	b)	Define TO rule. Write a basic TO algorithm for Time Stamp-Based Concurrency Control.	6 Marks
		(OR)	
8.	a)	Explain in detail about the query processing problem and objectives.	6 Marks
	b)	Write short notes on Distributed Cost Model in query optimization.	6 Marks

UNIT-V

9.	a)	List and explain the information requirements during allocation.	6 Marks
	b)	Illustrate the allocation model in detail.	6 Marks
		(OR)	
10.	a)	Why the hybrid fragmentation is needed if we have the horizontal and vertical fragmentations?	6 Marks
	b)	Explain how the allocation model attempts to minimize the total cost for processing and storage.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

ADVANCED OPERATING SYSTEMS

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	How are network computers different from traditional personal computers? Describe some usage scenarios in which it is advantageous to use network computers.	8 Marks
	b)	Write short notes on memory management.	4 Marks
		(OR)	
2.	a)	Explain the structure of operating system.	6 Marks
	b)	How operating system switches between Kernel and User modes? Explain.	6 Marks

UNIT-II

3.	a)	What is critical section problem? Explain about the requirements that must satisfy for a solution to a critical section problem.	6 Marks
	b)	How mutual exclusion can be implemented with semaphores?	6 Marks
		(OR)	
4.	a)	What are various types of errors generated when programmers use semaphores incorrectly to solve critical section problem?	7 Marks
	b)	Illustrate Deadlock and Starvation concepts with clear example.	5 Marks

UNIT-III

5.	a)	Sketch the structure of page table. What is the purpose of paging the page tables?	6 Marks
	b)	Discuss n-optimal page replacement algorithm.	6 Marks
		(OR)	
6.	a)	What is swapping? Discuss.	5 Marks
	b)	Consider LRU, FIFO and Optimal page replacement algorithms. Rank these algorithms from bad to perfect according to their page fault rate.	7 Marks

UNIT-IV

7.	a)	Apply progressive download in real-time streaming.	8 Marks
	b)	Categorize different schemes for protection.	4 Marks
		(OR)	
8.	a)	"The separation of policy and mechanism is important for flexibility in providing protection". Comment on it.	6 Marks
	b)	Explain various characteristics of I/O devices.	6 Marks

UNIT-V

9.	a)	List the goals of distributed operating system.	7 Marks
	b)	What is meant by group communication? How is it useful in distributed systems?	5 Marks
		(OR)	
10.	a)	Differentiate distributed systems from centralized systems.	6 Marks
	b)	Write the taxonomy of distributed systems.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

DATA WAREHOUSING AND DATA MINING

[Computer Science, Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is multidimensional model? How it is used in data warehouse?	4 Marks
	b)	What are the different types of warehouse schemas? Discuss clearly.	8 Marks
		(OR)	
2.		Explain in detail about data mining functionalities with appropriate diagrams.	12 Marks

UNIT-II

3.	a)	Define constraint based association mining. What are the different types of constraint based mining?	6 Marks
	b)	Illustrate about mining frequent item sets using vertical data format.	6 Marks
		(OR)	
4.	a)	Describe the necessity of preprocessing the data.	8 Marks
	b)	Explain the forms of data preprocessing.	4 Marks

UNIT-III

5.	a)	What is data classification? What are the steps involved in data classification?	6 Marks
	b)	What are the major issues regarding classification and prediction?	6 Marks
		(OR)	
6.	a)	How does the naive Bayesian classification works? Explain.	6 Marks
	b)	Explain training Bayesian belief networks.	6 Marks

UNIT-IV

7.	a)	Explain the strengths and weaknesses of k-means algorithm.	6 Marks
	b)	Illustrate the bisecting k-means algorithm.	6 Marks
		(OR)	
8.	a)	Explain the classification of points according to center-based density.	6 Marks
	b)	Describe about time and space complexity of DBSCAN algorithm.	6 Marks

UNIT-V

9.	a)	What is time-series data? Explain.	4 Marks
	b)	Describe about mining time-series data.	8 Marks
		(OR)	
10.		Explain about multidimensional analysis and descriptive mining of complex data objects.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

ADVANCED CONTROL SYSTEMS

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Find the state model for the given transfer function using direct decomposition $\frac{Y(S)}{U(S)} = \frac{(S+2)(S+3)}{S(S^2+9S+20)(S+1)}$. 12 Marks

(OR)

2. Consider the system with $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix}$ $B = \begin{bmatrix} 1 & 1 \\ 1 & 0 \\ 1 & 1 \end{bmatrix}$ 12 Marks

Obtain equivalent system in controllable companion form.

UNIT-II

3. What are isoclines? How are they useful in constructing phase plane trajectories? 12 Marks

(OR)

4. a) State various types of nonlinearities. 6 Marks
   b) Derive the describing function of dead zone and saturation nonlinearity. 6 Marks

UNIT-III

5. Explain the Lyapunov stability analysis of linear time invariant systems. 12 Marks

(OR)

6. Explain the terms: 12 Marks
   i) Stability in the sense of Lyapunov. ii) Asymptotic stability.

UNIT-IV

7. Explain the procedure to design a full order observer and compare the procedure with minimum order observer. 12 Marks

(OR)

8. a) Explain how pole placement is accomplished by state feedback. 6 Marks
   b) Design a full order state observer using Ackermann formula for the system defined by 6 Marks

$\dot{x} = Ax, y = Cx$. Where $A = \begin{bmatrix} -1 & 1 \\ 1 & 2 \end{bmatrix}$; $C = \begin{bmatrix} 1 & 0 \end{bmatrix}$;

for the desired Eigen values $\mu_1 = -5$, $\mu_2 = -5$.

UNIT-V

9. Obtain the control law which minimizes the performance index J= $\int_0^x (x_1^2 + u^2)dt$. 12 Marks

For the system $\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u.$

(OR)

10. a) Explain the general formulation of optimal control problem for the minimum time problem 6 Marks

b) Test the sufficient conditions for the existence of the asymptotically stable optimal control solution for the plant $\dot{x} = \begin{bmatrix} 0 & 0 \\ 0 & 1 \end{bmatrix} x + \begin{bmatrix} 1 \\ 1 \end{bmatrix} U$; 6 Marks

with performance index $j = \int_0^\infty (x_1^2 + x^2)dt$

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

HIGH VOLTAGE ENGINEERING

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		What is the difference between pure liquid and commercial liquid? Briefly explain the properties of liquid dielectric.	12 Marks
		(OR)	
2.	a)	Write a short note on corona discharges and analyze the reasons.	6 Marks
	b)	What is Paschen's law? Explain its significance.	6 Marks

UNIT-II

3.	a)	Explain the working principle of VandeGraaff generator along with applications.	6 Marks
	b)	Explain the construction and working of a voltage doubler circuit.	6 Marks
		(OR)	
4.	a)	Explain the construction and working principle of a tesla coil.	6 Marks
	b)	Explain two different schemes for cascade connection of transformers for producing very high voltages at 50 Hz.	6 Marks

UNIT-III

5.		Explain the construction and working principle of Electrostatic voltmeter. What are its advantages and disadvantages?	12 Marks
		(OR)	
6.	a)	Explain the measurement of impulse current using magnetic link and also write a short note on tools for measurement of impulse current.	6 Marks
	b)	Explain the operation of Schering bridge for three terminal measurements.	6 Marks

UNIT-IV

7.	a)	What is meant by non-destructive testing? Explain the construction and working of a transformer ratio arms bridge.	6 Marks
	b)	Briefly explain the need of discharge detection and partial discharge measurements.	6 Marks
		(OR)	
8.		Draw and explain the concept of PD equivalent model.	12 Marks

UNIT-V

9.		Explain the following terms used in HV testing as per standards: i) Disruptive discharge voltage. ii) Impulse Voltage. iii) 50% and 100% flashover voltage. iv) Withstand Voltage.	12 Marks
		(OR)	
10.		Explain in detail the power frequency voltage test with stand on a 66kV porcelain insulator.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

POWER ELECTRONIC CONVERTERS

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) With the help of neat schematic diagram, explain the gate drive circuit of IGBT. 6 Marks
   b) Write short notes on pulse transformers and optocouplers. 6 Marks

(OR)

2. a) Explain the operation of GTO using two transistor analogy and sketch its switching characteristics. 8 Marks
   b) Write short notes on IGCT. 4 Marks

UNIT-II

3. Discuss the following power factor improvement techniques. 12 Marks
   i) PWM control-single. ii) Three phase control.

(OR)

4. With the help of neat circuit diagram and relevant wave forms, explain the operation of single phase series converter and list out its applications. 12 Marks

UNIT-III

5. Identify the type of converter that can operate as an inverter into a passive or an active **ac** system and explain its operation with the help of neat circuit diagram and relevant waveforms. 12 Marks

(OR)

6. a) Demonstrate the operation of one-phase-leg circuit and draw its **ac** output voltage waveform. 8 Marks
   b) Obtain square-wave voltage harmonics for a single phase full wave voltage source converter. 4 Marks

UNIT-IV

7. Explain the operation of Cuk converter with the help of neat circuit diagram and relevant waveforms and deduce the expressions for average output voltage and switching frequency. 12 Marks

(OR)

8. Identify the type and class of commutation technique employed for current commutated chopper and explain its operation with the help of neat circuit and relevant wave forms. 12 Marks

UNIT-V

9. Apply Space Vector Modulation technique for digital control of two level voltage source inverter and obtain the expression for corresponding space vector. 12 Marks

(OR)

10. Discuss various harmonic reduction techniques. 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

POWER SYSTEM SECURITY AND STATE ESTIMATION

[Electrical Power Systems]

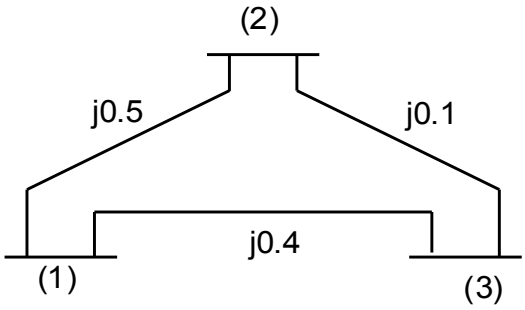
Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Prove that $Y_{bus}=A^T y\, A$ with usual notation. 6 Marks

   b) For the system shown in figure, obtain the Y_{BUS} by inspection method. Take bus (1) as reference bus. The impedance marked are in p.u. 6 Marks



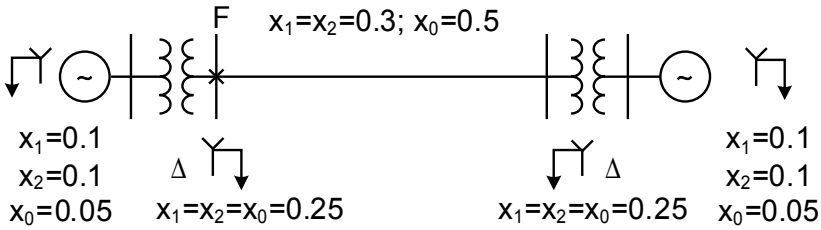
(OR)

2. a) Develop the step-by-step procedure for formation of bus impedance matrix for addition of a link. 4 Marks

   b) Modify the impedance matrix for a network connecting following impedances to include the addition of Z_b= 0.25 p.u. connected between buses 1 and 4 so that it couples through mutual impedance j0.15 p.u. to the branch impedance already connected between buses 1 and 2. Impedances of network are X_{10} = X_{30} = j1.25, X_{12} = j0.25, X_{23} = j0.4, X_{24} = j0.125, X_{43} = j0.2 where '0' is a reference node. All impedances are in p.u. Preserve all buses. 8 Marks

UNIT-II

3. a) For the system shown in below figure, a LLG fault occurs at point F. Find fault current using bus impedance algorithm. 9 Marks



   b) List out the various significance of fault studies in designing the power system components. 3 Marks

(OR)

4. A large 3-phase power system having 'n' buses is subjected to L-G fault on a bus 'p'. Using matrix notation derive expressions for: 12 Marks
   i) Symmetrical components of currents in the faulted bus.
   ii) Voltage at any bus excluding the faulted bus.
   iii) Current at any other bus.

UNIT-III

5.	a)	Classify the buses present in power system and explain the significance of each bus in power system.	6 Marks
	b)	Explain various new convergence techniques available in load flow solution.	6 Marks

(OR)

6.	a)	With a neat flow chart, explain the computational procedure for load flow solution for fast decoupled method.	6 Marks
	b)	Derive the basic equations for load flow studies and also write the assumptions to get the simple load flow equations.	6 Marks

UNIT-IV

7.		Explain the security-constrained optimal power flow (SCOPF) function of power system security with an example.	12 Marks

(OR)

8.	a)	Define linear sensitivity factors. Write a flow chart and explain contingency analysis using sensitivity factors.	6 Marks
	b)	Describe the technique, how to use PSAT tool box for solving the power system security problem.	6 Marks

UNIT-V

9.	a)	What do you understand by the term 'secured power system' and 'power system blackout'?	6 Marks
	b)	Discuss briefly about the power system state estimation.	6 Marks

(OR)

10.	a)	Describe briefly about treatment of bad data orthogonal decomposition.	6 Marks
	b)	Explain in detail about Identification of bad data in state estimation problem.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

REACTIVE POWER COMPENSATION AND MANAGEMENT

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Explain the Reactive power characteristics of load compensation. 12 Marks

(OR)

2. Discuss the phase balancing and power factor correction of un-symmetrical loads in detail. 12 Marks

UNIT-II

3. Explain the uncompensated transmission line with example. 12 Marks

(OR)

4. a) Distinguish between passive and active shunt compensation. 6 Marks
   b) What do you mean by a synchronous condenser and draw its equivalent circuit for steady state and transient conditions? 6 Marks

UNIT-III

5. a) What is the effect of Harmonics on Reactive power co-ordination? 6 Marks
   b) Write short notes on radio frequency and electromagnetic interferences. 6 Marks

(OR)

6. a) List the objectives of Reactive power planning. Explain the role of capacitor placement and size in Reactive power management. 6 Marks
   b) Discuss the main objectives of Reactive power coordination. 6 Marks

UNIT-IV

7. a) What are the advantages of using suitable rating of capacitors? 6 Marks
   b) How to control capacitors to change Reactive power? Explain with suitable example. 6 Marks

(OR)

8. Discuss in detail about the load patterns. Also explain basic methods of load shaping. 12 Marks

UNIT-V

9. a) Draw the single line diagram of a plastic industry and explain the reactive power management in plastic industry. 6 Marks
   b) With the help of a neat diagram, explain the Reactive power management in an electric Arc furnace. 6 Marks

(OR)

10. a) Discuss minimum capacitance required for excitation in wind mill generator. 6 Marks
    b) Explain about Reactive power requirements for a traction system. 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular Examinations March - 2018

MICROCONTROLLERS AND APPLICATIONS

[Electrical Power Systems, Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Illustrate the modes of operation of timer of 8051 microcontroller.	CO1	6 Marks
	b)	Explain the role of 8051's timers in the control of power electronic converters.	CO5	6 Marks

(OR)

2.	a)	Write an 8051 assembly language program to find number of 0's and 1's in given 8 bit number.	CO3	6 Marks
	b)	Describe the different types of addressing modes of 8051 microcontroller with suitable examples.	CO1	6 Marks

UNIT-II

3.		Explain how ADC 0808 can be interfaced with 8051 microcontroller with an application.	CO2	12 Marks

(OR)

4.		Write ALP to generate a square pulse of 1kHz frequency on P1.5 pin of 8051 microcontroller using Timer-0 in mode-1.	CO3	12 Marks

UNIT-III

5.	a)	Bring out the difference between power-on reset and brown-out reset in PIC16F877microcontroller.	CO1	6 Marks
	b)	Explain the PIC register file.	CO1	6 Marks

(OR)

6.		Explain the operation of the following instructions in PIC16F877 microcontroller. i) BTFSS f,b ii) BCF f,b iii) DECFSZ f,d iv) GO TO K	CO1	12 Marks

UNIT-IV

7.		Write an assembly language program for PIC16F877 to fire the SCRs in a single phase AC voltage controller. Bit-0 of port-B is used for receiving the ZCD pulse and bits 1 and 2 are used for firing the SCRs S_1 and S_2 respectively. Write the comments for the instructions used in your program. Assume the counts for the delay routines are known.	CO4	12 Marks

(OR)

8.	a)	Explain the interrupt vector table of PIC 16F877 microcontroller.	CO1	6 Marks
	b)	How the priority of the interrupts can be changed in PIC16F877 microcontroller?	CO2	6 Marks

UNIT-V

9.	Write a PIC16F877 assembly language program for utilizing the A/D module of 16F877 for converting analog input to digital output. Channel-1 is to be used for receiving the analog input and the digital result is to be stored in port-B. Write comments for the ALP instructions used in the program.	CO5	12 Marks

(OR)

10.	A single phase SCR full converter is to be controlled to obtain a constant DC voltage employing PIC16F877microcontroller. Use port-B as input port and port-C as output port. The ZCD pulse is connected to bit-1 of port-B. Write an assembly language program to generate appropriate firing pulses for the SCRs (open loop) with $\alpha = 30^{o}$.	CO5	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

DATA STRUCTURES AND ALGORITHMS

[Computer Science, Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Describe the operations of following linear data structures with algorithms: 12 Marks
   i) Stacks. ii) Queues.

(OR)

2. a) Prove that $10n^4 + 7n + 10 = O(n^4)$. 6 Marks
   b) Write the algorithm of Towers of Hanoi puzzle and analyze its complexity. 6 Marks

UNIT-II

3. a) Write recursive algorithms that perform pre-order and post-order tree walks on a tree of **n** nodes. 6 Marks
   b) Explain breadth-first search algorithm with an example. 6 Marks

(OR)

4. Discuss the time complexities of the following algorithms. 12 Marks
   i) Linear Search. ii) Bucket Sort. iii) BFS.

UNIT-III

5. a) Prove that, A node in a binary search tree has two children, then its successor has no left child and its predecessor has no right child. 6 Marks
   b) Compare and contrast binary search tree and AVL tree. 6 Marks

(OR)

6. a) Construct a BST of height 2, 3, 4, 5 and 6 using set of keys {1, 4, 5, 10, 16, 17, 21}. 8 Marks
   b) Describe AVL tree operations. 4 Marks

UNIT-IV

7. a) State the general method for Divide and Conquer approach. 6 Marks
   b) Write a recursive algorithm for Binary Search. 6 Marks

(OR)

8. Sort the following array elements by using Merge sort technique. 12 Marks
   179, 285, 310, 351, 652, 254, 423, 861, 450, 520.

UNIT-V

9. Describe n-Queen problem with an algorithm. Draw the state space tree for 4-Queen problem. 12 Marks

(OR)

10. Write dynamic programming solution for the traveling sales person problem for the network with cost adjacency matrix $\begin{bmatrix} 0 & 10 & 15 & 30 \\ 4 & 0 & 9 & 11 \\ 5 & 13 & 0 & 10 \\ 7 & 7 & 8 & 0 \end{bmatrix}$. 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

COMPUTER NETWORKS

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Draw the frame structure of WLAN and explain each field in detail.	8 Marks
	b)	Write the applications of WLAN.	4 Marks
		(OR)	
2.	a)	Write the need for virtual LANs and write its applications.	6 Marks
	b)	Apply virtual LANs concept to a LAN and demonstrate its operation.	6 Marks

UNIT-II

3.	a)	Analyze the functionality of MPLS over RSVP.	6 Marks
	b)	Write the applications of MPLS and RSVP.	6 Marks
		(OR)	
4.	a)	Explain the difference between ATM and Frame relay networks.	4 Marks
	b)	Compare the architecture of ATM and Frame relay	8 Marks

UNIT-III

5.	a)	Analyze the client side issues and server side issues in WWW.	6 Marks
	b)	Write the applications of world wide web.	6 Marks
		(OR)	
6.		Analyze the functions of protocols used in voice over IP.	12 Marks

UNIT-IV

7.		Discuss about Public Key Cryptographic algorithm with an example.	12 Marks
		(OR)	
8.		Apply Public Key Cryptographic algorithm to plain text and explain the operation in detail.	12 Marks

UNIT-V

9.		Analyze Communication Energy Model in Wireless Sensor Networks.	12 Marks
		(OR)	
10.		Explain about DEEP clustering and reclustering of Wireless Sensor Networks in Remote sensing.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

DIGITAL COMMUNICATION TECHNIQUES

[Digital Electronics and Communication Systems, Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Sketch the signal space diagram of **π/4** QPSK signal. 7 Marks
   b) Using gray encoding, level the signal points with corresponding data points. 5 Marks

(OR)

2. Derive the power density spectrum of CPFSK. 12 Marks

UNIT-II

3. a) How OQPSK and **π/4** QPSK are different from QPSK. 4 Marks
   b) With relevant diagram explain the operation of BPSK transmitter and receiver. 5 Marks
   c) Write the expression for bit error rate for coherent binary PSK. 3 Marks

(OR)

4. a) Draw the correlation receiver structure for coherent receiver scheme. 4 Marks
   b) Discuss in detail the generation, detection, signals space diagram and error probability of QPSK. 8 Marks

UNIT-III

5. Derive the matched filter transfer function and its impulse response. 12 Marks

(OR)

6. a) A matched filter has frequency response $H(f) = \dfrac{1 - e^{-j2\pi/T}}{j2\pi f}$ 7 Marks

   i) Determine the impulse response $h(t)$ corresponding to $H(f)$.
   ii) Determine the signal waveform to which the filter characteristic is matched.

   b) Draw the correlation receiver structure for coherent receiver scheme. 5 Marks

UNIT-IV

7. a) How is bandwidth allied during transmission and reception of spread spectrum system? 7 Marks
   b) List the properties of PN sequence. 5 Marks

(OR)

8. Explain the generation of PN sequence and also prove its properties. 12 Marks

UNIT-V

9. a) Compare between single carrier and multi carrier communication. 7 Marks
   b) Write notes on OFDM signal processing. 5 Marks

(OR)

10. a) What is OFDMA? 3 Marks
    b) Derive the total channel capacity of a non ideal linear filter channel. 9 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

DIGITAL SYSTEM DESIGN AND TESTING

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Write about the design of sequential circuits using FPGAs with an example. Also explain how FPGAs are useful in DSP. 6 Marks
   b) Design a 4-bit full adder using Iterative circuit. 6 Marks

(OR)

2. a) Explain the design procedure for 3-bit binary up counter using CPLD for timing applications. 7 Marks
   b) Tabulate the truth table and implement the following using ROM with capacity 4 x 2 ROM. 5 Marks
   $F_1(A,B) = \sum(1,2,3)$
   $F_2(A,B) = \sum(0,2)$

UNIT-II

3. a) How random testing is better than deterministic testing method take an example and justify your answer. 6 Marks
   b) Define: 6 Marks
   i) Singular cover. ii) Propagation D-cube.
   iii) Primitive D-cube of fault. iv) D-intersection.

(OR)

4. a) Describe the algorithmic steps involved in PODEM. 4 Marks
   b) With an example, explain the transition count testing method for VLSI applications. 8 Marks

UNIT-III

5. a) Explain the terms: (i) State identification. (ii) Machine identification. 6 Marks
   b) What is successor tree and explain its properties. 6 Marks

(OR)

6. a) What are the assumptions made for detecting the faults? 4 Marks
   b) Elaborate the sequences involved in final state identification with examples. 8 Marks

UNIT-IV

7. Explain in detail the fault model of PLA and test generation with an example. 12 Marks

(OR)

8. Apply IISC algorithm and minimize the given PLA output function. F = 2001 + 2020 +1200 + 2211. 12 Marks

UNIT-V

9. Explain the following terms: 12 Marks
   i) Flow table. ii) Sate reduction. iii) Minimal closed covers.

(OR)

10. a) Define Races, Hazards and Cycles related to digital electronics. 6 Marks
    b) Show a primitive and reduced flow tabJle for the circuit specified by "Z=1 if both $x_1 = x_2 = 1$, but only if x_1 becomes 1 before x_2". 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

IMAGE AND VIDEO PROCESSING

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What are the components of general purpose image processing system? Write about the function of each block.	8 Marks
	b)	Explain the concept of gray levels.	4 Marks
		(OR)	
2.		Compare convolution and correlation properties of the 2 D FFT and discuss in detail.	12 Marks

UNIT-II

3.	a)	Define histogram of a digital image. Explain how histogram is useful in image enhancement.	6 Marks
	b)	What is meant by image enhancement and how it is achieved by point processing?	6 Marks
		(OR)	
4.		Distinguish between various filters in image restoration.	12 Marks

UNIT-III

5.		With a neat sketch, explain block transform Coding for Radar images.	12 Marks
		(OR)	
6.	a)	Define image compression. Explain about the redundancies in a digital image.	6 Marks
	b)	What is error-free compression? Give an overview of source encoder.	6 Marks

UNIT-IV

7.		Compare digital video standards.	12 Marks
		(OR)	
8.		Apply 3-D sampling structures to sample digital video signals.	12 Marks

UNIT-V

9.		Apply motion compensated video compression for satellite images and explain in detail.	12 Marks
		(OR)	
10.		Discuss about the restoration techniques used for degraded video.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

MODERN DIGITAL SIGNAL PROCESSING

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is meant by Polyphase form of QMF bank?	6 Marks
	b)	Explain about FIR QMF bank and IIR QMF bank.	6 Marks
		(OR)	
2.		Explain the interpolation process with an example.	12 Marks

UNIT-II

3.		Explain in detail the following non-parametric methods of power spectral estimation and also compare them. i) Blackman and Turkey method. ii) Welch method.	12 Marks
		(OR)	
4.	a)	State and prove the properties of autocorrelation function.	6 Marks
	b)	Derive the expression for Yule-Walker method for AR Model-parameter.	6 Marks

UNIT-III

5.		Briefly discuss about Filtering, Smoothing and Prediction.	12 Marks
		(OR)	
6.		Compare the learning curves of different gradient search methods and explain about stability and its rate of convergence.	12 Marks

UNIT-IV

7.		Discuss the convergence of LMS algorithm in detail.	12 Marks
		(OR)	
8.		Explain the cancellation of echoes in long distance telephone circuits.	12 Marks

UNIT-V

9.		Give an application of RLS algorithm on Adaptive Equalization.	12 Marks
		(OR)	
10.		Discuss in detail about the Recursive Mean Square Estimation of random variables.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

ASIC DESIGN

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Define ASIC and describe the various types of ASICs.	6 Marks
	b)	What are the key parameters that motivate the chip designers to opt for ASICs? Explain.	6 Marks

(OR)

2.		Assess the desirable characteristics of ASICs. Evaluate the performance of gate array ASICs, standard cell based ASICs and mixed-mode ASICs.	12 Marks

UNIT-II

3.	a)	List and explain the various practical issues involved in the Programmable ASICs.	6 Marks
	b)	List and explain the various design specifications involved in the Programmable ASICs.	6 Marks

(OR)

4.		Discuss in detail FPGA design approach using Altera FPGA design tool.	12 Marks

UNIT-III

5.	a)	Explain the various logic synthesis tools available for ASIC and FPGA based design.	6 Marks
	b)	Illustrate and explain how does logic synthesis generate smaller and faster circuits than handed design.	6 Marks

(OR)

6.		Give a schematic example showing hierarchical design of a half adder and the sub schematic of cell HADD and explain.	12 Marks

UNIT-IV

7.		Illustrate some of the terms and definitions needed to describe the KL-algorithm with an example network graph and connectivity matrix.	12 Marks

(OR)

8.	a)	State the significances of design for testability in ASIC design flow.	6 Marks
	b)	Explain in detail about automatic test pattern generation in testing.	6 Marks

UNIT-V

9.	a)	List the various commercial Floor planning tools for ASIC design and explain.	6 Marks
	b)	Discuss in detail about the terms: i) Channel Definition ii) Clock Planning	6 Marks

(OR)

10.		With neat sketches, explain how I/O and Power Planning is done in the Floor Planning.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

ANALOG IC DESIGN

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Discuss in detail the design features of folded cascode amplifier. 12 Marks

(OR)

2. Summarize the second order effects in MOSFETs. 12 Marks

UNIT-II

3. Explain about cascode (or) CE-CB operational amplifier and obtain AC analysis of it. 12 Marks

(OR)

4. Evaluate the frequency response of a common gate stage with necessary equivalent circuits and hence calculate the input impedance of the amplifier. 12 Marks

UNIT-III

5. Draw the block diagram of a One-stage CMOS op-amp. Develop the necessary expressions for op-amp gain. 12 Marks

(OR)

6. Estimate the effect of feedback on noise. 12 Marks

UNIT-IV

7. Discuss in detail about Multipole Systems. 12 Marks

(OR)

8. Identify and assess the compensation for op-amp that makes it completely independent of process and temperature variations. 12 Marks

UNIT-V

9. Summarize the non inverting Amplifier and Unity-Gain Sampler/Buffer in Switched Capacitor amplifiers. 12 Marks

(OR)

10. Discuss in detail about Simple PLL. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

COMPUTATIONAL METHODS IN MICROELECTRONICS

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Recall and illustrate matrix Newton-Raphson method. 6 Marks
   b) Appraise Least squares Chebyshev polynomial fit. 6 Marks

(OR)

2. List the steps in Guass elimination method and solve the following system of equations. 12 Marks

$$X_1+3X_2+4X_3+X_4 = 7$$
$$2X_1+5X_2+3X_3-2X_4 = 10$$
$$X_1+4X_2+6X_3-X_4 = 8$$
$$2X_1+2X_2-X_3+2X_4 = 3$$

UNIT-II

3. Explain in detail about Thermal Finite Element Analysis. 12 Marks

(OR)

4. Write short notes on lumped parameter systems. 12 Marks

UNIT-III

5. a) List the applications of partial difference equations. 6 Marks
   b) Summarize direct analysis of finite volume method. 6 Marks

(OR)

6. Define method of characteristics and illustrate its methodology. 12 Marks

UNIT-IV

7. Discuss in detail about the Non-uniform grids and mapping. 12 Marks

(OR)

8. Suggest the block diagram and explain it to model or compute graphically the physical structures. 12 Marks

UNIT-V

9. Assess the process and device simulation of diode. 12 Marks

(OR)

10. a) Develop and illustrate KL Algorithm for partitioning. 8 Marks
    b) Develop Simulated Annealing for placement of blocks. 4 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

DEVICE MODELING

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Estimate the small signal capacitance in two terminals MOS structure. 6 Marks
   b) Define Pinch off voltage. Explain in detail body effect with necessary equations. 6 Marks

(OR)

2. a) Discuss in detail about Potential balance and charge balance of two terminal MOS structure. 6 Marks
   b) Define inversion. Formulate the regions of inversions and with necessary equations. 6 Marks

UNIT-II

3. a) Compare and contrast the regions of operation of a transistor. 6 Marks
   b) Critique a complete and simplified charge sheet models with necessary equations. 6 Marks

(OR)

4. a) Draw the necessary diagrams of IDS-VDS characteristics in weak inversion with VGS as a parameter and give the comparison to weak and strong inversion in terms of equations. 6 Marks
   b) Define the breakdown in MOS device. Explain the effect of breakdown on IDS-VDS characteristics with a neat sketch. 6 Marks

UNIT-III

5. Derive the expression for threshold voltage with the help of necessary equations 12 Marks

(OR)

6. Explain the modes of operation of NMOS depletion-mode transistor. 12 Marks

UNIT-IV

7. Discuss in detail about terminal currents in Quasi static operation. 12 Marks

(OR)

8. Identify the limitations of Quasi static model. 12 Marks

UNIT-V

9. Generalize the gate capacitances and junction capacitance with neat structures. 12 Marks

(OR)

10. Illustrate a small signal model for the channel path of a MOS transistor in DC operation. 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

DIGITAL IC DESIGN

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Suggest a technique that overcomes monotonicity problem in dynamic circuits. 8 Marks
   b) Implement 3-input AND Gate using Domino Logic. 4 Marks

(OR)

2. a) Define and calculate CMOS inverter delay. 4 Marks
   b) Analyze possible ways of reducing static and dynamic dissipation in CMOS design. 8 Marks

UNIT-II

3. Illustrate the functionality of dynamic sequential circuits. 12 Marks

(OR)

4. a) List the differences between combinational and sequential circuits. 6 Marks
   b) Classify and explain logic circuits based on temporal behavior. 6 Marks

UNIT-III

5. a) Explain about the DRAM cell with relevant diagram. 8 Marks
   b) Explain about power consumption in CMOS gates. 4 Marks

(OR)

6. a) Model a 3T DRAM cell and explain its operation in detail. 8 Marks
   b) With the help of neat sketch, predict the functionality of typical low power chip. 4 Marks

UNIT-IV

7. a) Illustrate the importance of multiplier with pipelined algorithm in future implementations. 6 Marks
   b) List and summarize the functionality that can be implemented using an adder with the help of a neat outline for a 4- bit adder. 6 Marks

(OR)

8. a) Implement arithmetic functions of ALU with adder and explain. 8 Marks
   b) Explain modified booth's algorithm with example. 4 Marks

UNIT-V

9. a) Consider an NMOS transistor in a 0.6μm process with W/L = 4/2 λ. In this process, the gate oxide thickness is 100Å and the mobility of electrons is 350cm²/v.sec, the threshold voltage is 0.7V. Plot I_{ds} ***vs*** V_{ds} for V_{gs} = 0,1,2,3,4 and 5 V. 6 Marks
   b) What are the elements for cost to produce an integrated circuit? 6 Marks

(OR)

10. a) List various types of design methods to implement a CMOS System. 8 Marks
    b) Discuss structured design strategies with an example. 4 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

IC FABRICATION

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Illustrate the operations involved in silicon shaping.	6 Marks
	b)	Develop a generalized flow chart to communicate IC fabrication steps.	6 Marks
		(OR)	
2.		Explain in detail the Czochralski crystal growing technique.	12 Marks

UNIT-II

3.		Define DC plasma excitation. Explain plasma etching techniques.	12 Marks
		(OR)	
4.		Apply Optical Lithography technique for IC fabrication.	12 Marks

UNIT-III

5.	a)	Briefly discuss the equipment used in ion implantation.	6 Marks
	b)	Give a brief account on plasma assisted deposition.	6 Marks
		(OR)	
6.		Explain the Fick's one dimensional equation and its solutions to communicate with IC fabrication engineering community.	12 Marks

UNIT-IV

7.	a)	Explain the applications of metallization process.	6 Marks
	b)	Calculate the percent of molecules that suffer collisions during travel from a source to the substrate in a deposition system at 0.5 pa and 10^{-4} pa. The source -to-substrate distance is 50cm. Assume a typical molecular diameter of 34°.	6 Marks
		(OR)	
8.		Identify the problems encountered in metallization and suggest the methods to overcoming them.	12 Marks

UNIT-V

9.		With flow diagram, explain the generic assembly sequence for plastic and ceramic packages.	12 Marks
		(OR)	
10.		List and summarize thermal and mechanical design considerations in VLSI packaging.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

ADVANCED DIGITAL SIGNAL PROCESSING

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Develop the Polyphase form of QMF bank.	6 Marks
	b)	Explain Interpolation.	2 Marks
	c)	With a neat block diagram, explain Two-Channel Quadrature-Mirror Filter Bank.	4 Marks

(OR)

2.		Obtain efficient CIC filter structure for decimation and interpolation.	12 Marks

UNIT-II

3.	a)	Prove the properties of Autocorrelation.	5 Marks
	b)	Develop ARMA model for power spectrum estimation of signals corrupted by noise.	7 Marks

(OR)

4.		Estimate power spectrum using Welch and Barlett methods.	12 Marks

UNIT-III

5.		Derive the algorithm that computes reflection co-efficients with parallel processors.	12 Marks

(OR)

6.		Describe the important properties of Linear Prediction Error Filters.	12 Marks

UNIT-IV

7.		Explain Cooley-Tukey FFT and Sliding DFT algorithms.	12 Marks

(OR)

8.		Compute DFT over narrow frequency band. Give the necessary equations.	12 Marks

UNIT-V

9.	a)	How high quality audio signal is reproduced in compact disc system? Explain with a neat diagram.	6 Marks
	b)	Specify the important uses of DSP in digital audio.	6 Marks

(OR)

10.		Draw the simplified long distance telephone circuit and explain how echoes are cancelled in long distance voice telephony.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

RF CIRCUIT DESIGN

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Explain the working of inductor and capacitor at low frequency and high frequency and design a resonant circuit with a loaded Q = 1.1 at f = 142.4MHz that operates between source resistance of l00Ω and load resistance of l00Ω. 12 Marks

(OR)

2. a) Explain briefly the effects of RF/microwave signals in a circuit that are not present at DC or low AC signals. 5 Marks
   b) Discuss on high frequency resistors and its classification with brief explanations and necessary diagrams. 7 Marks

UNIT-II

3. A two port transistorized network have the following scattering matrix : 12 Marks

$$[S] = \begin{bmatrix} 0.15\angle 0^{\circ} & 0.85\angle -45^{\circ} \\ 0.85\angle 45^{\circ} & 0.2\angle 0^{\circ} \end{bmatrix}$$

Determine whether the transistorized network is reciprocal and lossless. If port 2 is terminated with a matched load, what is the return loss seen at port 1? If port 2 is terminated with a short circuit, what is the return loss seen at port 1?

(OR)

4. a) With the help of suitable derivation, explain power considerations for a transmission line. 5 Marks
   b) Explain various terminations used in Microstrip transmission line. 7 Marks

UNIT-III

5. Explain construction and functionality of High Electron Mobility Transistor. 12 Marks

(OR)

6. Using the input impedance equation of transmission line, derive the input impedance equation for shorted and open circuit transmission line and draw their voltage, current and impedance waveforms. 12 Marks

UNIT-IV

7. a) Write a short note on low noise, linear RF BJT operation based on its structure. 6 Marks
   b) Enumerate the importance of 'power relations' in the design of an amplifier at high frequencies. 6 Marks

(OR)

8. Write short notes on: 12 Marks
   i) Low noise amplifiers. ii) VGA amplifiers.

UNIT-V

9. Describe in detail noise in PLL. 12 Marks

(OR)

10. Define mixer. Explain mixer with neat block diagram. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

DIGITAL SATELLITE COMMUNICATIONS

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Explain the uplink and down link design procedure for a satellite system.	12 Marks
		(OR)	
2.	a)	State Kepler's third law and derive an expression for the Orbital time period of a satellite.	6 Marks
	b)	Design a receiving antenna with an efficiency of 80% for a satellite system. If the receiver antenna is a parabolic dish antenna with diameter of 1.75m and is operating at 5.956GHz. Calculate the antenna gain in dB.	6 Marks

UNIT-II

3.		Discuss Delay and Throughput considerations in a satellite system	12 Marks
		(OR)	
4.		What are the factors involved in the design of operational NGSO constellation satellites?	12 Marks

UNIT-III

5.		List the features, merits and demerits of Centralized control DAMA and Distributed control DAMA.	12 Marks
		(OR)	
6.	a)	Explain the process of Real Time Frame reconfigurations employed in DA-TDMA systems.	6 Marks
	b)	Discuss the Frame and Burst structures for DA-TDMA.	6 Marks

UNIT-IV

7.		Explain the concept of DS Acquisition and Synchronization.	12 Marks
		(OR)	
8.		What is *p-n* sequence? Discuss the generation of an *m*-sequence.	12 Marks

UNIT-V

9.		Explain mobile satellite networks. Also list out the parameters affecting the performance on design of MSAT networks.	12 Marks
		(OR)	
10.		Explain network error control strategies for a VSAT link for reliable transmission.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

ADVANCED POWER SEMICONDUCTOR DEVICES

[Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Illustrate the device selection strategies of power semiconductor devices in detail.	CO2	7 Marks
	b)	The measured values of a diode at a temperature of 25°C are V_D = 1.0 V at I_D = 50 mA V_D = 1.5 V at I_D = 600 mA Determine: i) The emission co–efficient. ii) The leakage current.	CO3	5 Marks
		(OR)		
2.		"Switching of power semiconductor devices results in Electro Magnetic Interference (EMI)". Investigate the reasons, its affects and the measures to minimize the EMI.	CO4	12 Marks

UNIT-II

3.	a)	Explain in detail about mounting techniques for thyristor.	CO1	6 Marks
	b)	The trigger circuit of a thyristor has a source voltage of 15V and the load line has a slope of −120 V per ampere. The minimum gate current to turn-on the SCR is 25mA. Compute: i) Source resistance required in the gate circuit. ii) The trigger voltage and trigger current for an average gate power dissipation of 0.4 watts.	CO3	6 Marks
		(OR)		
4.	a)	Compare various operating characteristics of GTO and thyristor.	CO2	5 Marks
	b)	How are the thyristors protected against over voltages? Explain in detail about over voltage protection of thyristor with a suitable circuit diagram.	CO2	7 Marks

UNIT-III

5.	a)	Construct the basic model and operating characterises of power BJT with a neat sketch.	CO3	5 Marks
	b)	Explain the constructional details and working of different types of MOSFETs with neat sketch.	CO1	7 Marks
		(OR)		
6.	a)	Discuss in detail about construction and working of n-channel MOSFET with a neat sketch.	CO1	5 Marks
	b)	Discuss in detail about switching characteristics of MOSFET with a neat sketch.	CO1	7 Marks

UNIT-IV

7.	a)	Explain the construction and operational details of MCTs with a neat sketch.	CO1	6 Marks
	b)	Compare various operating characteristics of Bidirectional thyristors, Light - activated thyristors, TRIAC and GTOs.	CO2	6 Marks

(OR)

8.	a)	Discuss the construction and working of GTO with a neat sketch.	CO1	6 Marks
	b)	Explain the construction and operational details of TRIAC with a neat sketch.	CO1	6 Marks

UNIT-V

9.		Construct a MOS-gated driver circuit with a neat block diagram and explain in detail.	CO3	12 Marks

(OR)

10.		Design and explain 'R' triggering circuit for thyristor.	CO5	12 Marks

CODE No.:16MT18302 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations March - 2018

ANALYSIS OF INVERTERS

[Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	A single phase half bridge inverter has a resistive load R = 2 Ω and the DC input voltage of 24 V. Calculate the following parameters. i) RMS output voltage at fundamental frequency. ii) Output power. iii) I_{av} and I_m of each transistor. iv) Peak reverse blocking voltage of each transistor.	CO3	5 Marks
	b)	Justify the need for voltage control and harmonic elimination in single phase inverter.	CO5	7 Marks

(OR)

2.	a)	Discuss in detail about on-line and off-line uninterruptable power supply.	CO1	7 Marks
	b)	With necessary diagrams, analyze the multi pulse width modulation techniques used to control the output voltage of single phase inverter.	CO2	5 Marks

UNIT-II

3.		With a neat circuit diagram and waveforms, examine the working of 180 degree conduction mode operation of three phase inverter with R-load.	CO1	12 Marks

(OR)

4.	a)	Mention the advantages and disadvantages of multi pulse width modulation.	CO1	5 Marks
	b)	A 3-ϕ bridge inverter delivers power to a resistive load from a 450V DC source for a Star connected load of 10Ω / ϕ. Find: i) RMS value of load current. ii) RMS value of thyristor current. iii) Load power for both 180º and 120º mode.	CO3	7 Marks

UNIT-III

5.		A 1- ϕ auto sequential commutated current source inverter feeds a R-load. Describe its working with appropriate circuit and waveforms. Find also the circuit turn-off time for thyristors.	CO1	12 Marks

(OR)

6.	a)	A single phase auto sequential CSI is fed from 215V DC source. The load is R = 25Ω. Take a factor of safety of 1 for thyristor. Calculate value of source inductance assuming a maximum current change of 0.5 in one cycle. Neglect all losses. Find also the values of commutating capacitors.	CO3	5 Marks
	b)	Discuss in detail about PWM techniques of CSI.	CO1	7 Marks

UNIT-IV

7.	a)	List out the various methods for voltage control of series resonant inverters and explain any one method in detail.	CO1	6 Marks
	b)	List out the advantages of parallel resonant inverters in detail.	CO1	6 Marks
		(OR)		
8.		Describe the operation of Class-E resonant inverter with circuit diagram and waveforms.	CO1	12 Marks

UNIT-V

9.	a)	Express the output waveform of five level inverters with a neat sketch.	CO1	6 Marks
	b)	List out various applications of different types of multilevel inverter.	CO1	6 Marks
		(OR)		
10.		Analyze the operation of cascaded multilevel inverter with necessary details.	CO2	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

ANALYSIS OF POWER CONVERTERS

[Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Analyze the effect of source inductance in single phase fully controlled converter.	CO2	6 Marks
	b)	Discuss freewheeling action in single phase semi-controlled converters.	CO1	6 Marks
		(OR)		
2.	a)	With the help of waveforms, explain the operation of a single phase semi-controlled converter.	CO1	6 Marks
	b)	Evaluate the performance parameters of single phase semi-controlled converter with inductive load.	CO3	6 Marks

UNIT-II

3.	a)	Evaluate the performance parameters of three phase fully-controlled converter with inductive load.	CO3	6 Marks
	b)	Explain the operation of a three phase fully-controlled converter with the help of waveforms.	CO1	6 Marks
		(OR)		
4.	a)	Derive the following performance parameters of three phase full converter with resistive load. i) Maximum and average output voltage. ii) Average output and load RMS current. iii) Rectification efficiency. iv) TUF and output power.	CO3	6 Marks
	b)	Derive the Fourier series for input power factor of a three phase semi-converter.	CO4	6 Marks

UNIT-III

5.	a)	The buck-boost regulator has an input voltage of V_s = 12 V. The duty cycle k = 0.25 and the switching frequency is 25 kHz. If inductance is 150 μH, filter capacitance is 220 μF and the average load current I_a is 1.25 A, determine: i) The average output voltage. ii) The peak to peak output voltage ripple ΔV_c. iii) The peak to peak output current ripple ΔI. iv) The peak current of the transistor.	CO3	6 Marks
	b)	Explain the operation of CUK converter with neat waveforms.	CO2	6 Marks
		(OR)		
6.	a)	Using suitable technique, design the inductor and capacitor for Cuk converter and derive the inductor current and capacitor voltage for Cuk converter in continuous mode of operation.	CO4	6 Marks
	b)	With neat waveforms, explain the continuous and discontinuous modes of operation of Buck converter.	CO1	6 Marks

UNIT-IV

7.	a)	Explain the principle of operation of ZCS resonant converter.	CO1	6 Marks
	b)	Analyze the operation of push-pull converter with power circuit and waveforms.	CO1	6 Marks

(OR)

8.		Discuss different modes of M-type ZCS resonant converter with neat waveforms and equivalent circuits.	CO1	12 Marks

UNIT-V

9.	a)	With neat waveforms, explain the non-circulating mode of operation of single phase dual converter with RL load.	CO1	6 Marks
	b)	Compare dual converter and AC Voltage controller. Also mention their applications.	CO2	6 Marks

(OR)

10.		With neat waveforms, explain the operation of three phase full wave AC voltage controller feeding an R-load.	CO1	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations March - 2018

MODELING OF ELECTRICAL MACHINES

[Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Explain the concept of field energy and co-energy with the help of graphical representation. CO1 6 Marks

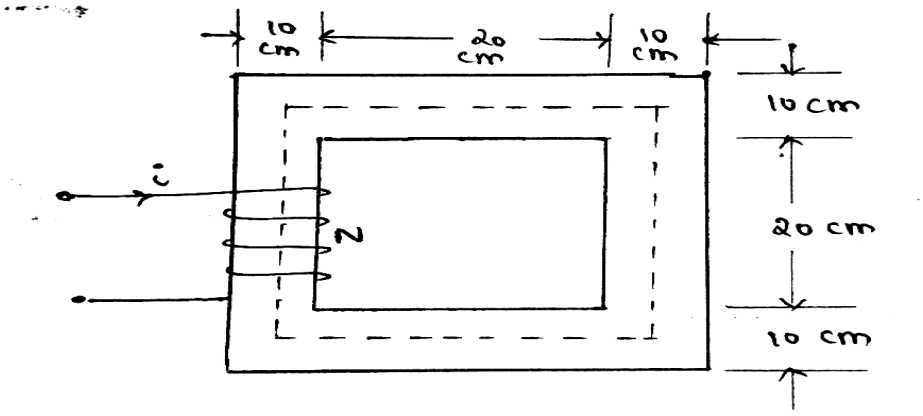
   b) Explain the energy conversion process in electro mechanical system with a neat sketch. CO1 6 Marks

(OR)

2. a) Explain the torque equation of cylindrical machine using the concept of field energy and co-energy. CO1 6 Marks

   b) Choose the magnetic circuit as shown in figure which has the core of relative permeability of 2000. The depth of the core is 5cm. The coil has 400 turns and carries a current of 1.5A CO3 6 Marks

   i) Draw the magnetic equivalent circuit.
   ii) Find the flux and flux densities in the core.
   iii) Determine the inductance of the coil.



UNIT-II

3. Consider a 4 pole DC machine having armature of radius 12.5cm and an effective length of 25cm. The poles cover 75% of the armature periphery. The armature winding consists of 33 coils. Each coil having seven turns. The coils are accommodated in 33 slots. The average flux density under each pole is 0.75T. CO3 12 Marks

   I) If the armature is lap wound, determine;
      i) armature constant K_a.
      ii) induced armature voltage when the armature rotates at 1000 r.p.m.
      iii) current in the coil and the electromagnetic torque developed when the armature current= 400A.
      iv) the power developed by the armature.
   II) If the armature is wave wound, repeat the parts (i) to (iv). The current rating of the coils remains the same as in lap wound armature.

(OR)

4.	a)	Prove that the electromagnetic torque developed in DC machine depends on flux and the armature current.	CO2	6 Marks
	b)	Choose a 12 kW, 100V, 1000 r.p.m. DC shunt generator having the armature resistance of 0.1 ohms and shunt field resistance of 80 ohms and N_f=1200 turns per pole. The rated field current is 1 ampere. The machine is operated as separately excited DC generator at 1000 r.p.m. with the rated field current. I) Calculate the terminal voltage at full load neglecting the effect of armature reaction. II) Considering the effect of armature reaction equivalent to 0.06 times field amperes at full load, determine; i) the full load terminal voltage. ii) the field current required to make the terminal voltage V_t=100V at full loaded condition.	CO3	6 Marks

UNIT-III

5.	a)	Apply the transformation technique to show that the transpose of current transformation matrix is equal to its inverse.	CO4	6 Marks
	b)	Explain in detail about the transformation of stationary circuit variables to arbitrary reference frame for inductive element.	CO1	6 Marks

(OR)

6.	a)	Explain the inverse park transformation using transformation theory.	CO1	6 Marks
	b)	How are the stationary circuit variables referred to arbitrary reference frame?	CO2	6 Marks

UNIT-IV

7.		Illustrate the arbitrary reference frame equivalent circuit for three-phase symmetrical induction machine.	CO3	12 Marks

(OR)

8.	a)	Develop the equivalent circuit for steady state operation of symmetrical induction machine.	CO2	6 Marks
	b)	Explain the significance of rotor resistance in induction machine.	CO1	6 Marks

UNIT-V

9.	a)	Discuss the methods of speed control of synchronous machine with suitable circuit diagram.	CO1	6 Marks
	b)	Illustrate the equivalent circuit model of the synchronous machine with necessary expressions.	CO3	6 Marks

(OR)

10.	a)	Analyze the role of damper winding in synchronous machine with relevant circuit diagram.	CO2	6 Marks
	b)	Elaborate the torque equation for synchronous machine in machine variable form.	CO2	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

SOFTWARE TESTING TECHNIQUES

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Describe the advantages and disadvantages of verification and different ways of assessing coverage in verification. 12 Marks

(OR)

2. Develop the process of developing test strategy with an example test case. 12 Marks

UNIT-II

3. Describe installation, uninstallation and up gradation testing. 12 Marks

(OR)

4. Why acceptance testing is done? What are the characteristics of acceptance testing? 12 Marks

UNIT-III

5. Differentiate between quality plan and test plan. 12 Marks

(OR)

6. Why test processes need improvement and elaborate on problems related to testing process? 12 Marks

UNIT-IV

7. Discuss the concepts estimated, budgeted, approved and actual with respect to effort variance. 12 Marks

(OR)

8. Explain test case efficiency and team efficiency concept with an example. 12 Marks

UNIT-V

9. Explain design and challenges in automation testing. 12 Marks

(OR)

10. Explain architecture and process model for automation. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

INFORMATION THEORY AND CODING TECHNIQUES

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

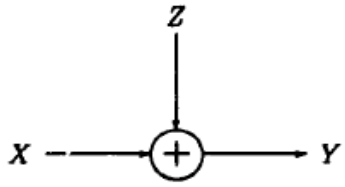
1. a) Explain source coding theorem and develop equation for efficiency. 6 Marks
   b) Write short notes on Kraft's inequality. 6 Marks

(OR)

2. a) State and prove the properties of mutual information. 6 Marks
   b) A discrete source generates independent symbols with probabilities 0.2, 0.25, 0.15, 0.15, 0.15, 0.1. Determine the entropy of the source. 6 Marks

UNIT-II

3. a) Compute the channel capacity of the following discrete memory less channel: 6 Marks



Where $P_r\{Z = 0) = P_r\{Z = \alpha\} = 1/2$. The alphabet for x is $X = \{0, 1\}$ Assume that Z is independent of X.

   b) Describe the tradeoff between bandwidth and signal to noise ratio using Shannon-Hartley theorem. 6 Marks

(OR)

4. a) Discuss briefly the importance of source coding and channel coding techniques in communication systems. 6 Marks
   b) Derive the Shannon channel coding theorem and a system has a band width of 5kHz and SNR of 28dB at the input to the receiver. Find its information carrying capacity. 6 Marks

UNIT-III

5. Consider a (7,4) code whose generator matrix is 12 Marks

$$G = \left[\begin{array}{cccc:cccc} 1 & 1 & 0 & 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 & 0 \\ 1 & 1 & 1 & 0 & 0 & 1 & 0 \\ 1 & 0 & 1 & 0 & 0 & 0 & 1 \end{array}\right]$$

i) Compute all code words of code.
ii) Develop parity matrix check matrix of the code.
iii) Compute the syndrome for the received vector 1101101.
iv) Construct error detecting circuit.

(OR)

6. a) Discuss the generator matrix for linear block codes. 6 Marks

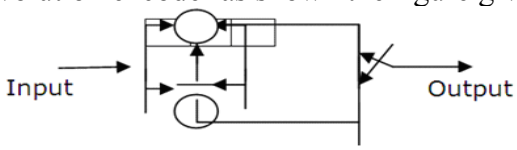
b) Generator matrix of a (7,4) block code is $G = \begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 1 \end{bmatrix}$ 6 Marks

i) Determine the Parity - Check matrix.

ii) Determine the maximum weight of the code.

UNIT-IV

7. Consider the convolution encoder as shown the figure given below. 12 Marks



i) Find the impulse response of the encoder.

ii) Determine the output code word for the data input d = [101].

iii) Draw the state diagram and the trellis diagram.

(OR)

8. a) Explain the convolution encodes with constraint length K and rate K/n. 6 Marks

b) Explain the sequential decoding algorithm with an example. 6 Marks

UNIT-V

9. a) Explain in detail the principle of operation of Turbo encoder with neat block diagram. 6 Marks

b) Encode channel with Reed-Solomon code for given message 0101101111. 6 Marks

(OR)

10. Design a (7, 3) RS decoder for a receiving vector R = 100001101111010110111. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

OPTICAL COMMUNICATIONS AND NETWORKS

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is dispersion? Distinguish between linear and nonlinear dispersions.	6 Marks
	b)	Discuss in detail about stimulated Brillouin and Raman scattering techniques.	6 Marks
		(OR)	
2.	a)	With reference to optical transmission, explain the significance of the terms : i) Radiation modes and Leaky modes. ii) Cut-off condition and Cut-off wavelength. iii) Coupled modes and Mode mixing.	6 Marks
	b)	Explain the different types of refractive index profiles needed for optical fibers and compare their features.	6 Marks

UNIT-II

3.	a)	Explain array splicing techniques with neat sketches.	8 Marks
	b)	Mention design objectives of optical cable.	4 Marks
		(OR)	
4.	a)	List and explain the types of connectors available for interconnecting the optical fiber cables.	7 Marks
	b)	Explain the types of misalignments caused while connecting two optical fibers.	5 Marks

UNIT-III

5.		Differentiate between various photodiodes with respect to their internal and external quantum efficiencies.	12 Marks
		(OR)	
6.	a)	Derive the expression for the power transfer function of the Fabry-Perot filter.	6 Marks
	b)	Explain how a four-wave mixing in a semiconductor optical amplifier is used for wavelength conversion.	6 Marks

UNIT-IV

7.	a)	Compare the performance characteristics of RZ and NRZ signaling schemes used for optical transmission with neat sketches and comment on the DC balance feature.	6 Marks
	b)	List out the merits and demerits of a Coherent Detection Receiver. How does it improve the sensitivity?	6 Marks
		(OR)	
8.		Write short notes on different types of signal formats used in modulation.	12 Marks

UNIT-V

9.		Design the transmission layer using: i) SDM system. ii) WDM system.	12 Marks
		(OR)	
10.		Explain the working of enhanced HFC network with the help of architecture and compare it with FTTC network.	12 Marks

CODE No.:16MT23808 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations March - 2018

REAL TIME SYSTEMS

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Contrast Task graph to Precedence constraint graph. 12 Marks

(OR)

2. Describe characterization of real time system reference model. 12 Marks

UNIT-II

3. Explain MLF priority driven scheduling approach. 12 Marks

(OR)

4. Defend whether weighted round robin is priority driven scheduling approach or not. Support your discussion with an example. 12 Marks

UNIT-III

5. Discuss Integrated failure handling with respect to Fault Tolerant systems. 12 Marks

(OR)

6. Explain techniques that can be adapted to provide software redundancy. 12 Marks

UNIT-IV

7. Elucidate memory management techniques adaptable in commercial Real Time Operating Systems. 12 Marks

(OR)

8. Discuss in detail about various timing services available in typical Real Time Operating Systems Kernel. 12 Marks

UNIT-V

9. Describe features of self host systems with supporting examples. 12 Marks

(OR)

10. Discuss Real Time POSIX standard. 12 Marks

CODE No.:16MT1BS01 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations October - 2018

APPLIED MATHEMATICS

[Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Point out the number of generalized Eigen vectors of each rank corresponding to $\lambda = 4$ that will appear in a canonical basis for $\begin{pmatrix} 4 & 2 & 1 & 0 & 0 & 0 \\ 0 & 4 & -1 & 0 & 0 & 0 \\ 0 & 0 & 4 & 0 & 0 & 0 \\ 0 & 0 & 0 & 4 & 2 & 0 \\ 0 & 0 & 0 & 0 & 4 & 0 \\ 0 & 0 & 0 & 0 & 0 & 7 \end{pmatrix}$. CO3 12 Marks

(OR)

2. a) Explain least square solution and find the least square solution to the system described by $\mathbf{X_1+X_2= 3,\ -2X_1+3X_2 = 1}$ and $\mathbf{2X_1 - X_2 = 2}$. CO2 6 Marks

   b) Define QR algorithm and find the QR factorization of $A=\begin{pmatrix} 1 & 0 & 1 \\ 0 & 1 & 1 \\ 1 & 1 & 2 \end{pmatrix}$. CO3 6 Marks

UNIT-II

3. a) Find the extremals of $\int (y^2 + (y')^2 + 2ye^x)dx$. CO2 6 Marks

   b) Find the extremals of $\int_0^{\frac{\pi}{2}} (y^2 - (y')^2 - 2y\sin x)dx \ ;\ y(0) = y(\frac{\pi}{2})=0.$ CO3 6 Marks

(OR)

4. Solve the problem $\mathbf{y'' = 3x + 4y,\ y(0) = 0,\ y(1) = 1}$ by Rayleigh Ritz method. CO4 12 Marks

UNIT-III

5. Define discrete random variable. A random variable X has the following probability function CO4 12 Marks

X	0	1	2	3	4	5	6	7	8
P(X)	a	3a	5a	7a	9a	11a	13a	15a	17a

   i) Determine the value of 'a'
   ii) Find the distribution function of X.
   iii) Find **P(X<3), P(X≥ 3)** and **P(0<X<5)**.

(OR)

6. a) If the random variable 'X' takes value 1, 2, 3 and 4 such that 2P(X = 1) = 3P(X = 2) = P(X = 3) = 5P(X = 4). Find the probability distribution. CO2 6 Marks

   b) The mileage which a car owner gets with certain kind of radial tyre is a random variable having an exponential distribution with mean 4000 km. Find the probabilities that one of these tyres will last: CO2 6 Marks
   i) at least 2000km. ii) at most 3000km.

UNIT-IV

7. Consider the problem of assigning 5 jobs to 5 persons. The assignment cost is given as follows. CO3 12 Marks

		Job				
		1	2	3	4	5
Person	A	8	4	2	6	1
	B	0	9	5	5	4
	C	3	8	9	2	6
	D	4	3	1	0	3
	E	9	5	8	9	5

Determine the optimum assignment schedules.

(OR)

8. Use Simplex method to solve the LPP CO4 12 Marks
Maximize $\mathbf{Z = 4X_1+10X_2}$
subject to the conditions $\mathbf{2X_1+2X_2 \leq 50;}$
$\mathbf{2X_1+5X_2 \leq 100;}$
$\mathbf{2X_1+3X_2 \leq 90}$ and $\mathbf{X_1 \geq 0, X_2 \geq 0}$.

UNIT-V

9. a) Find the Eigen values and Eigen functions of the boundary value problem $y'' + \lambda y = 0$, **y (0) =0, y (1) =0, 0<x<1**. CO4 6 Marks

b) Show that w(x)=1, the functions $\varphi_i(x)$=cos(ix), i=0, 1, 2… are orthogonal over the interval [-π, π]. Construct the corresponding orthonormal set of functions. CO3 6 Marks

(OR)

10. a) Obtain the Fourier series expansion f(x) = x^2 in (-l, l). CO3 6 Marks
Find the sum of $\frac{1}{1^4} + \frac{1}{2^4} + \frac{1}{3^4} + \ldots\ldots$

b) Define Drichlet's condition for a Fourier series. Evaluate the half range cosine series for f(x) = x in (0, π). CO3 6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations October - 2018

POWER ELECTRONIC CONVERTERS

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Discuss the design constraints of Gate and Base drive circuits of power semiconductor switches. 4 Marks
   b) Explain electrical isolation of Gate and Base drive circuits. 8 Marks

(OR)

2. a) Compare Power Diode with Signal Diode and classify Power Diodes. 6 Marks
   b) Define 'softness factor' of a Power Diode and derive the expressions for peak inverse current and recovery time of a fast recovery Diode. 6 Marks

UNIT-II

3. Justify how power factor of a single phase fully controlled converter can be improved by: 12 Marks
   i) Extinction angle control. ii) Symmetric angle control.

(OR)

4. With the help of neat circuit and relevant waveforms, analyze the operation of six pulse full converter feeding R-Load with a firing angle $\alpha=60^0$. And also derive the expression for average output voltage. 12 Marks

UNIT-III

5. With the help of neat circuit diagram, explain the operation of a three phase full wave voltage source converter and obtain its AC voltage and DC current waveforms. 12 Marks

(OR)

6. Discuss various types of current source converters. 12 Marks

UNIT-IV

7. a) Describe different modes of operation of Buck regulator and draw relevant waveforms. 6 Marks
   b) Derive the expressions for average output voltage, current ripple, voltage ripple and input current associated with Buck regulator. 6 Marks

(OR)

8. Explain the operation of L-type ZCS resonant converter and sketch relevant waveforms. 12 Marks

UNIT-V

9. a) Explain the concept of Multilevel inverters. 4 Marks
   b) Explain the circuit scheme, switching states and operation of flying capacitor type Multilevel inverter. 8 Marks

(OR)

10. Write short notes on the following voltage control techniques: 12 Marks
    i) Multiple PWM. ii) Harmonic injection. iii) Delta modulation.

CODE No.:16MT10704 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations October - 2018

POWER SYSTEM SECURITY AND STATE ESTIMATION

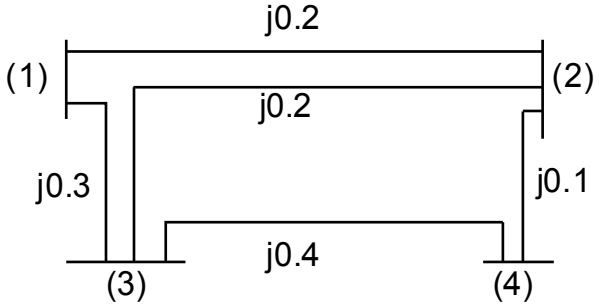
[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Develop the bus admittance matrix using direct inspection method shown in below figure. 6 Marks



b) Prove that when there is no mutual coupling the diagonal and off-diagonal elements of the admittance Y_{Bus} can be computed from 6 Marks

$$Y_{ij} = \sum_{j} Y_{ij} \quad and \quad Y_{ij} = -Y_{ij}$$

Where Y_{ij} is the sum of the admittance of all the lines connecting buses **i** and **j**.

(OR)

2. a) Show that the diagonal and off-diagonal elements of the bus admittance can be mathematically represented as $Y_{pq} = \sum_{q} Y_{pq}$ *and* $Y_{pq} = -Y_{pq}$ Where Y_{pq} is the sum of the admittance of all the lines connecting buses **p** and **q**. 3 Marks

b) Derive an expression for adding a link to a network with mutual inductance. 9 Marks

UNIT-II

3. Obtain the double line to ground **(LLG fault)** fault current of a three phase system using Z_{bus} building algorithm. 12 Marks

(OR)

4. a) A synchronous generator of 50MVA, 13.8 kV has sub-transient reactance, negative sequence reactance and zero sequence reactance equal to j0.1, j0.1 and j0.08 respectively. If a LLG fault occurs at the terminals of the generator (neutral solidly grounded), find fault current. 6 Marks

b) Develop the primitive network three phase representations in impedance form and admittance form. Also define the matrices for stationary and rotating elements. 6 Marks

UNIT-III

5. A 3-Bus power system is shown in figure below. The system load data is given in table 1. The voltage at Bus-2 is maintained at 1.03 pu. The maximum and minimum reactive power limits of the generation at Bus-2 are 0.35 and 0 pu respectively. Carry out two iterations of load flow solution using NR method. 12 Marks

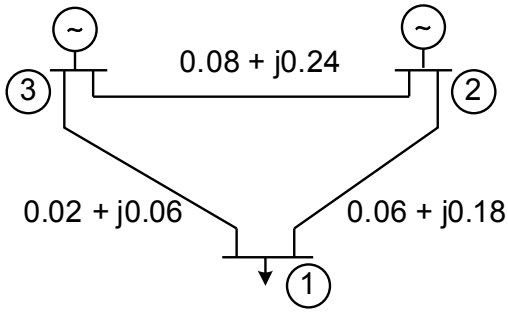


table 1: Bus data

Bus No.	Type of bus	Bus Voltage (pu)	Generation		Load	
			P_{Gi}(pu)	Q_{Gi}(pu)	P_{Di}(pu)	Q_{Di}(pu)
1	PQ	-	0	0	0.6	0.25
2	PV	1.03	0.2	-	0.5	0.2
3	Slack	1.05	-	-	-	-

(OR)

6. With the help of flow chart, explain and derive mathematical equations used in DC power flow solution. 12 Marks

UNIT-IV

7. a) With the block diagram, explain AC power flow security analysis. 6 Marks
   b) Describe security assessment and security enhancement in power system. 6 Marks

(OR)

8. a) Compare AC power flow and DC power flow methods. 6 Marks
   b) Explain the bounding technique applied in contingency selection. 6 Marks

UNIT-V

9. a) Explain the objectives and process of power system state estimation. 6 Marks
   b) Explain how Least Square Estimation (LSE) method is used in power system security and state estimation. 6 Marks

(OR)

10. Describe the structure and formation of Hessian matrix. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations October - 2018

MICROCONTROLLERS AND APPLICATIONS

[Electrical Power Systems, Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the architecture of 8051 microcontroller with a neat diagram.	CO1	6 Marks
	b)	Write 8051 ALP to read data from Port-1 with negative edge triggering at INT0 and supply the data to Port-2 by masking the upper 4 bits.	CO2	6 Marks
		(OR)		
2.		Design a suitable interface for interfacing an external ROM of size 16 KB to an 8051 microcontroller.	CO1	12 Marks

UNIT-II

3.	a)	Illustrate the analog to digital converter interfaced with 8051 microcontroller. On what factors of the hardware does the accuracy of conversion depend?	CO2	6 Marks
	b)	Write an assembly language program to get the digital equivalent of triangular wave input connected to input pin of ADC.	CO3	6 Marks
		(OR)		
4.	a)	Write a program to transfer the message “EPS” serially at 9600 baud, 8-bit data, 1 stop bit. Do this continuously.	CO3	6 Marks
	b)	Discuss various interrupts of 8051 and their priorities.	CO1	6 Marks

UNIT-III

5.		Draw the architecture of PIC 16F877 and discuss its salient features.	CO1	12 Marks
		(OR)		
6.	a)	Discuss the salient features of the ports of PIC16F877 giving the details such as number of bits, the data direction registers and memory addresses.	CO1	6 Marks
	b)	Explain the direct and indirect addressing modes of PIC16F877 with suitable sketches.	CO2	6 Marks

UNIT-IV

7.		Discuss the Timer - 0, 1 and 2 modules of PIC16F877microcontroller.	CO1	12 Marks
		(OR)		
8.	a)	Explain the interrupt structure of PIC16F877.	CO1	6 Marks
	b)	Explain the modes of operation of timer in a PIC microcontroller.	CO2	6 Marks

UNIT-V

9.		Explain in detail how a stepper motor can be controlled using PIC16F877microcontroller.	CO3	12 Marks
		(OR)		
10.		Discuss the DC motor control with ECCP.	CO4	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Supplementary Examinations October - 2018

DATA STRUCTURES AND ALGORITHMS

[Computer Science, Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Write an algorithm to read the elements of doubly linked list in reverse order. 12 Marks

(OR)

2. a) List the advantages of linked lists over arrays. 6 Marks
   b) Prove that $\mathbf{2n^2+5n+6=O(n^2)}$. 6 Marks

UNIT-II

3. a) Explain depth-first search algorithm with an example. 7 Marks
   b) Demonstrate the different data structures used to represent graphs. 5 Marks

(OR)

4. Compare and contrast Shell and Counting sort techniques. Which sorting method is the best in the worst case, justify your answer with an example and analysis? 12 Marks

UNIT-III

5. Derive the sequence of steps while inserting the keys 5, 28, 19, 15, 20, 33, 12, 17, 10 into a hash table with collisions resolved by chaining. Let the table have 9 slots and let the hash function be **h(k)=k mod9**. 12 Marks

(OR)

6. a) Consider a binary search tree T whose keys are distinct. Show that if the right subtree of a node **x** in T is empty and **x** has a successor **y**, then **y** is the lowest ancestor of **x** whose left child is also an ancestor of **x**. 8 Marks
   b) Summarize the drawbacks of binary search tree. 4 Marks

UNIT-IV

7. a) Explain the recursive algorithm to find the max and min elements in array of elements. 8 Marks
   b) Write an algorithm for Merge Sort. 4 Marks

(OR)

8. a) Derive the time complexity for Strassen's matrix multiplication algorithm. 6 Marks
   b) Write algorithm for merging two sorted arrays into a single sorted one using divide and conquer approach. 6 Marks

UNIT-V

9. Define LC search. Explain the general approach of LC search. 12 Marks

(OR)

10. Write a short notes on: 12 Marks
    i) Graph coloring. ii) LC search.

CODE No.:16MT18303 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations October - 2018

ANALYSIS OF POWER CONVERTERS

[Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	With the help of relevant waveforms, analyze in detail, the operation of a single phase fully controlled Rectifier feeding an RL load.	CO2	6 Marks
	b)	A single phase semi-converter is operated from 150V, 50 Hz supply. The load current with an average value I_{DC} is continuous and ripple free angle $\alpha = \pi/3$. Determine the following parameters: i) Displacement factor. ii) Harmonic factor of input current. iii) Input power factor.	CO3	6 Marks

(OR)

2.	a)	Explain the forced commutation techniques to improve the input power factor for DC-AC converters.	CO5	6 Marks
	b)	Explain the effect of source inductance in single phase half controlled converter.	CO1	6 Marks

UNIT-II

3.	a)	Derive the following performance parameters of three phase semi-converter feeding an R-load. i) Maximum and average output voltage. ii) Average output and load RMS current. iii) Rectification efficiency. iv) TUF and Output power.	CO3	6 Marks
	b)	Illustrate the forced commutation techniques to improve the input power factor for DC-AC converters.	CO4	6 Marks

(OR)

4.	a)	The 3-phase full wave AC voltage controller supplies a Y-connected resistive load of R = 15Ω and the line-to-line input voltage is Vs = 208 V at 50 Hz. The delay angle is $\alpha = \pi/6$. Determine: i) the input PF. ii) the expression for the instantaneous output voltage of phase A. Draw the output waveforms.	CO3	6 Marks
	b)	Discuss the continuous and discontinuous modes of operation for three phase semi-controlled converter supplying an R-load.	CO1	6 Marks

UNIT-III

5.	a)	Design a Buck-Boost converter and explain the continuous and discontinuous modes of operation of Buck-Boost converter with neat waveforms.	CO2	6 Marks
	b)	Explain the operation of class E chopper with neat waveforms.	CO2	6 Marks

(OR)

6.	a)	Explain the operation of class D chopper with neat waveforms.	CO1	6 Marks
	b)	The buck regulator has an input voltage of V_s = 12V. The required average output voltage is V_a = 5V at R = 500Ω and peak-to-peak output ripple voltage is 20mV. The switching frequency is 25 kHz. If the peak-to-peak ripple current of inductor is limited to 0.8 A, determine: i) the duty cycle. ii) the filter inductance. iii) the filter capacitance. iv) the critical values of L and C.	CO3	6 Marks

UNIT-IV

7.	a)	Explain the operation of Fly back converter with power circuit and waveforms.	CO1	6 Marks
	b)	Analyze the step-by-step procedure for the design of zero-current switching resonant converter.	CO4	6 Marks

(OR)

8.	a)	Explain the modes of operation of push pull converter with waveforms.	CO1	6 Marks
	b)	With necessary waveforms, formulate the operation of ZVS resonant converter feeding an R - load.	CO2	6 Marks

UNIT-V

9.	a)	With neat waveforms, analyze the operation of 3-phase half wave AC voltage controller driving an 'R' load.	CO2	6 Marks
	b)	Derive the following performance parameters of 3-phase full wave controller feeding a star connected R - load. i) RMS output phase voltage. ii) Input power factor.	CO2	6 Marks

(OR)

10.	a)	Analyze the principle of single phase control with neat waveforms.	CO2	6 Marks
	b)	An AC voltage controller has a resistive load of R=10Ω and the RMS input voltage is V_a=120V, 60Hz. The thyristors switch is on for n = 25 cycles and is off for m = 75 cycles. Determine: i) the RMS output voltage $V_0(t)$. ii) the input power factor.	CO3	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Supplementary Examinations October - 2018

MODELING OF ELECTRICAL MACHINES

[Power Electronics and Drives]

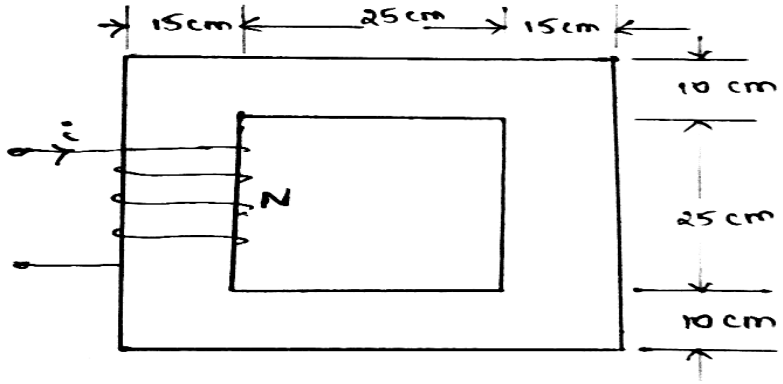
Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Choose the magnetic system as shown in figure, two sides are thicker than the other two sides. The depth of the core is 10cm, relative permeability of the core is 2000, number of turns N=300 and the current flowing through the coil is 1A. CO3 6 Marks

   i) Determine the flux in the core.
   ii) Determine the flux densities in the parts of the core.
   iii) Find the current 'i' in the coil to produce the flux of 0.012 Wb.



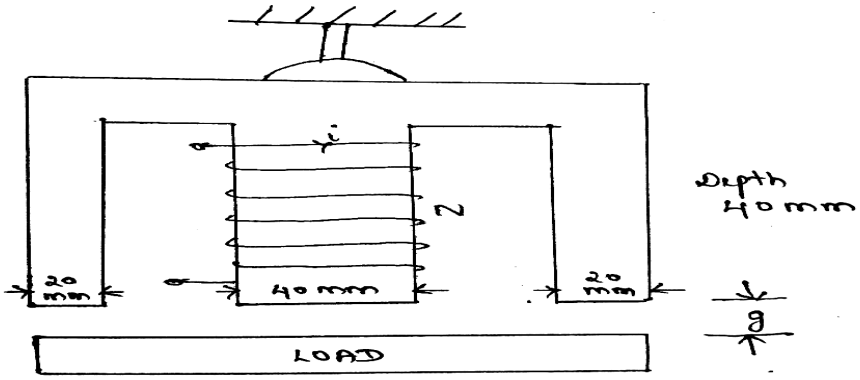
   b) Explain the equivalent circuit for a simple magnetic circuit with a suitable diagram. CO1 6 Marks

(OR)

2. a) Explain the torque equation of rotating machine using the concept of field energy and co-energy. CO1 6 Marks

   b) Choose an electromagnet lift system is shown in figure. The coil has 2500 turns, flux densities in air gap is 1.25 T. Assume the core material is ideal, for an air gap g =10mm. CO3 6 Marks

   i) Determine the coil current.
   ii) Determine the energy stored in magnetic system.
   iii) Calculate force on load (sheet of steel).
   iv) Determine the mass of the load.
   (acceleration due to gravity = 9.81m/sec^2)



UNIT-II

3.	a)	Analyze the state space model for permanent magnet DC machine.	CO2	6 Marks
	b)	Explain in detail about the equivalent circuit of a shunt connected DC machine.	CO1	6 Marks

(OR)

4.	a)	Develop the transfer function for a DC shunt machine with suitable expressions.	CO2	6 Marks
	b)	Analyze the voltage and torque equation for DC shunt machine with relevant equations.	CO2	6 Marks

UNIT-III

5.	a)	Explain the inverse park transformation using transformation theory.	CO4	6 Marks
	b)	How are the stationary circuit variables referred to arbitrary reference frame?	CO4	6 Marks

(OR)

6.	a)	Explain the transformation from two phase stationary reference frame to the two phase rotating reference frame.	CO4	6 Marks
	b)	How the stationary circuit variables are referred to synchronously rotating reference frame?	CO4	6 Marks

UNIT-IV

7.	a)	Analyze the equation for torque in arbitrary reference frame variable for symmetrical induction machine.	CO4	6 Marks
	b)	Evaluate the equation of transformation for rotor circuit of the symmetrical induction machine.	CO3	6 Marks

(OR)

8.	a)	Explain in detail about the constructional features of induction machine and give significance of rotor resistance.	CO1	6 Marks
	b)	Compose the significance of rotating magnetic field in three phase induction machine.	CO3	6 Marks

UNIT-V

9.		Evaluate the voltage equation of the synchronous machine in terms of machine variable form.	CO1	12 Marks

(OR)

10.		Choose a factory which has a 3-phase, 4kV, 400kVA, synchronous machine installed along with other induction motors. The following are the loads on the machine : Induction motor : 500kVA at 0.8 pf lagging Synchronous motor : 300kVA at 1.0 pf i) Compute the overall power factor at factory load. ii) To improve the power factor, the synchronous machine is over excited without any change in its load. Without overlapping the motor, to what extent the factory power factor be improved? Find the power factor and current of the synchronous motor under this condition.	CO3	12 Marks

CODE No.:16MT12501 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

CLOUD COMPUTING

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Identify and describe the salient features of Hyper-V. 12 Marks

(OR)

2. Compare and contrast the differences between distributed computing and virtualization. 12 Marks

UNIT-II

3. a) Describe the main characteristics of a cloud computing stack and virtual appliances. 6 Marks
   b) What is the innovative characteristic of cloud computing? 6 Marks

(OR)

4. a) Differentiate the NIST model from Cloud Cube model. 8 Marks
   b) Discuss the disadvantages of cloud computing. 4 Marks

UNIT-III

5. Summarize Open SaaS and SOA features along with their characteristics. 12 Marks

(OR)

6. a) Explain the working principle of salesforce.com. 6 Marks
   b) Define CaaS and provide its area of usage with suitable example. 6 Marks

UNIT-IV

7. a) Explain multicore technology and how does it relate to multiprocessing. 6 Marks
   b) Briefly describe the architecture of a multicore system. 6 Marks

(OR)

8. a) What is throughput computing and what does it aim to achieve? 6 Marks
   b) Define MPI. What are its main characteristics? 6 Marks

UNIT-V

9. a) What type of service is AppEngine? Describe the core components of AppEngine. 6 Marks
   b) Appraise the third party cloud services currently supported by AppEngine. 6 Marks

(OR)

10. a) What is a role? What types of roles can be used? 4 Marks
    b) Explain the Amazon CloudWatch with neat sketch. 8 Marks

CODE No.:16MT13804 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

IMAGE & VIDEO PROCESSING

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. List and explain in detail the basic functional elements of an image processing systems 12 Marks

(OR)

2. a) Explain in detail the different separable transforms. 4 Marks
   b) Compare all the image transformations and give its applications. 8 Marks

UNIT-II

3. a) Discuss the image smoothing filter with its model in the spatial domain. 6 Marks
   b) What are image sharpening filters? Explain the various types of it. 6 Marks

(OR)

4. a) Explain the types of gray level transformation used for image enhancement. 6 Marks
   b) What is histogram? Explain histogram equalization. 6 Marks

UNIT-III

5. a) Differentiate between lossless and lossy compression and explain transform coding system with a neat diagram. 8 Marks
   b) Define the procedure for Huffman coding. 4 Marks

(OR)

6. a) How the derivatives are obtained in edge detection during formulation? 6 Marks
   b) What are the three types of discontinuity in digital image? 6 Marks

UNIT-IV

7. List and explain different 3D motion models used in image formation. 12 Marks

(OR)

8. List and explain different digital video standards. 12 Marks

UNIT-V

9. Write the solution for the problems in motion estimation of a video. 12 Marks

(OR)

10. List and explain motion models in motion estimation. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

ADVANCED COMPUTER ARCHITECTURE

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Explain briefly about Amdahl's law. Derive the relation for speed up of a computer — 6 Marks

   b) Define Clock Cycle Time, CPI and Instruction Count. Solve the following problem with the given measurements. — 6 Marks

   Frequency of FP operations = 25%
   Average CPI of FP operations = 4.0
   Average CPI of other instructions = 1.33
   Frequency of FPSQR = 2%
   CPI of FPSQR = 20

   Assume that the two design alternatives are to decrease the CPI of FPSQR to 2 or to decrease the average CPI of all FP operations to 2.5. Compare these two design alternatives using the processor performance equation.

(OR)

2. a) Define Computer Architecture. Give a brief explanation about trends in technology. — 6 Marks

   b) Describe the following performance trends: — 6 Marks

   i) Bandwidth over Latency.
   ii) Scaling of transistor performance and wires.

UNIT-II

3. a) Design an algorithm to find the maximum of n-numbers in **O(log n)** time on an EREW PRAM model. — 6 Marks

   b) Explain about distributed memory multi computers. — 6 Marks

(OR)

4. a) Draw the architectural models of UMA, NUMA and COMA multiprocessors. — 6 Marks

   b) Compare PRAM models with real physical models of parallel computers. — 6 Marks

UNIT-III

5. a) Discuss the applicability and restrictions in using Amdahl's law, Gustafson's law to estimate the speed up performance of an n-processor system compared to a single processor system. — 6 Marks

   b) Derive Gustafson's law for speed up. — 6 Marks

(OR)

6. a) Define scalability and describe various scalability metrics. — 8 Marks

   b) Explain various types of bus systems with diagrams. — 4 Marks

UNIT-IV

7.	a)	Write briefly about directory-based cache coherence scheme with diagrams.	8 Marks
	b)	Describe the research trends in multilevel cache design and their performance.	4 Marks

(OR)

8.	a)	What is collision vector? Discuss about collision free scheduling with an example.	4 Marks
	b)	Explain Greedy Cycle with an example.	8 Marks

UNIT-V

9.	a)	Explain four general organizations for Multicore Systems with neat diagram.	6 Marks
	b)	Write the advantages of shared 1.2 caches on a chip over exclusive reliance on dedicated caches.	6 Marks

(OR)

10.	a)	With a neat block diagram, explain about Intel core i7 processor.	6 Marks
	b)	Draw a diagram for the Processing Element and Memory Design in the MasPar MP-1.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

BIG DATA ANALYTICS

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. List the advantages and limitations of Data Sources. 12 Marks

(OR)

2. Write the challenges and issues in the Big Data. 12 Marks

UNIT-II

3. Write a brief history of Hadoop system. 12 Marks

(OR)

4. Write the comparisons of Apache Hadoop and the Ecosystem. 12 Marks

UNIT-III

5. Explain in detail about Hadoop Pipes. 12 Marks

(OR)

6. Justify, how a Combiner Function process will work. 12 Marks

UNIT-IV

7. Write the importance of social media analytics in the real world. 12 Marks

(OR)

8. Explain in detail about building blocks of Hadoop. 12 Marks

UNIT-V

9. What is Multiclass? What are the various Multiclass classification techniques? 12 Marks

(OR)

10. Discuss in detail about Evaluating Predictive models. 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Analyze conceptual model of the UML with clear notations.	12 Marks
		(OR)	
2.	a)	List and explain the common properties of a class diagram.	6 Marks
	b)	Enumerate the steps involved to forward engineer a class diagram.	6 Marks

UNIT-II

3.	a)	Write short notes on Interaction Sequence diagrams.	6 Marks
	b)	Model Use Case diagram for Library Management System.	6 Marks
		(OR)	
4.	a)	Discuss in detail about collaboration diagrams.	6 Marks
	b)	Enumerate the steps to model a workflow.	6 Marks

UNIT-III

5.		Explain: i) Signals. ii) Call events. iii) Time and change events.	12 Marks
		(OR)	
6.	a)	Draw the class and component diagrams for online shopping.	6 Marks
	b)	Draw the sequence and activity diagrams for Multi Threaded Airport Simulation.	6 Marks

UNIT-IV

7.		Explain in detail about an architecture-centric process.	12 Marks
		(OR)	
8.		What is unified process? Explain in detail about 4P's in software development.	12 Marks

UNIT-V

9.		"Transition Completes Product Release". Justify.	12 Marks
		(OR)	
10.	a)	Write in detail about executing core work flows in elaboration phase.	6 Marks
	b)	Summarize activities early in the inception phase.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

INFORMATION SECURITY

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Write short notes on:
   i) Confidentiality. 3 Marks
   ii) Authentication. 3 Marks
   iii) Integrity. 3 Marks
   iv) Non-Repudiation. 3 Marks

(OR)

2. Discuss the following terms in detail with relevant examples.
   i) Interruption. 3 Marks
   ii) Interception. 3 Marks
   iii) Modification. 3 Marks
   iv) Fabrication. 3 Marks

UNIT-II

3. Compare and contrast MD5 and SHA-1. 12 Marks

(OR)

4. a) Mention the requirements for Hash functions. 6 Marks
   b) Generalize the SHA-1 processing of a single 512-bit block and also give the single step operation. 6 Marks

UNIT-III

5. Illustrate the signing function and verification function in Digital Signature Standard (DSS). 12 Marks

(OR)

6. a) Explain in detail about Public - Key Infrastructure (PKI). 8 Marks
   b) Mention the different management functions of PKI. 4 Marks

UNIT-IV

7. Explain how secure electronic transaction is used for E-Banking with suitable block diagrams in terms of card holders purchase request and verification by the merchants. 12 Marks

(OR)

8. a) Sketch the frame format for Authentication Header (AH). 6 Marks
   b) Explain the functionality of AH in Tunnel mode and Transport mode. 6 Marks

UNIT-V

9. Discuss the basic techniques of password selection strategies. 12 Marks

(OR)

10. Write short notes on:
    i) Backdoor. 3 Marks
    ii) Logic Bomb. 3 Marks
    iii) Trojan Horses. 3 Marks
    iv) Worms. 3 Marks

CODE No.:16MT20701 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

FLEXIBLE AC TRANSMISSION SYSTEM

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Explain the concept of power flow in a simple two machine system. Determine the active and reactive power flows in the system. 12 Marks

(OR)

2. Classify FACTS controllers. Appraise the significance of FACTS controllers over conventional controllers. 12 Marks

UNIT-II

3. Explain the functional control scheme of TSC-TCR type static VAR generator. Also, explain the design considerations from VAR demand vs VAR output characteristic. 12 Marks

(OR)

4. "Transient stability can be enhanced and power oscillations can be damped by SVC and STATCOM". Justify your answer. 12 Marks

UNIT-III

5. Explain the need for variable and fixed series compensation schemes. 12 Marks

(OR)

6. How transient stability can be improved with TCSC? How reactance of TCSC varied with firing angle 'alpha'? 12 Marks

UNIT-IV

7. The TCVR and TCPAR are similar in their operation. Explain how phase angle control can be achieved with voltage regulators. 12 Marks

(OR)

8. Derive the expression for real and reactive power between two nodes of UPFC. 12 Marks

UNIT-V

9. Explain the controller interactions between multiple SVCs (SVC-SVC) in a large power system. 12 Marks

(OR)

10. Explain the FACTS controller interactions with similar, dissimilar HVDC controller links. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

INTELLIGENT SYSTEMS

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. What is load forecasting? Explain how ANN is used for load forecasting. 12 Marks

(OR)

2. a) What is a perceptron? Develop the perceptron training algorithm. 6 Marks
   b) Discuss the drawbacks of single layer perceptron. 6 Marks

UNIT-II

3. a) Let R, S be defined on the sets **{1, 3, 5} x {1, 3, 5}**. 6 Marks
   Let **R: {(x,y)/y = x+2}**, **S: {(x,y)/x≤y}**. Using max-min composition, find (i) RoS (ii) SoR
   b) List out various properties of fuzzy logic with examples. 6 Marks

(OR)

4. Develop the fuzzy rule base for speed control of DC motor. 12 Marks

UNIT-III

5. Write the importance of mutation operator in a genetic algorithm. Discuss the various methods of mutation with example. 12 Marks

(OR)

6. a) List the various stopping conditions for genetic algorithm flow. 6 Marks
   b) Discuss the methods of termination techniques used in genetic algorithm. 6 Marks

UNIT-IV

7. What is genetic algorithm? Explain how GA is being used in the design of fuzzy logic controller. 12 Marks

(OR)

8. Explain the architecture of fuzzy back propagation network in detail. 12 Marks

UNIT-V

9. What is particle swarm optimization? List out the characteristic features of particle swarm optimization. 12 Marks

(OR)

10. a) What is self organization in social insects? Give your own explanation with examples. 6 Marks
    b) Discuss the artificial ant colony system in brief. 6 Marks

CODE No.:16MT20703 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

POWER SYSTEM STABILITY AND CONTROL

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	With the help of neat block diagram, develop the characteristic equation to analyze the effect of voltage regulator with one time lag.	9 Marks
	b)	Applying Routh Hurwitz criterion to find the stability of the voltage regulated machine with one time lag and comment on the stability system.	3 Marks

(OR)

2.	a)	Discuss the effect of armature reaction on unregulated synchronous machine and derive the condition for stability using Routh Hurwitz criterion.	8 Marks
	b)	Discuss various types of issues considered in stability studies.	4 Marks

UNIT-II

3.		Obtain the state space model of one machine connected to an infinite bus.	12 Marks

(OR)

4.	a)	Using the parks transformation, obtain the transformation of voltage equations for synchronous machine.	9 Marks
	b)	List out the various technique to determine stability of the power system.	3 Marks

UNIT-III

5.	a)	Develop the state space model of excitation system compensation with neat block diagram.	9 Marks
	b)	List the various types of excitation systems available in market for high power generation applications.	3 Marks

(OR)

6.	a)	Derive state space model for IEEE type-1 excitation system.	6 Marks
	b)	With the help of neat block diagram, explain the simplified view of excitation control and its control configuration.	6 Marks

UNIT-IV

7.	a)	Briefly explain the approximate model of the complete Exciter Generator system.	6 Marks
	b)	Discusses the effect of excitation system on dynamic stability and examine by Routh Hurwitz criterion for stability aspect.	6 Marks

(OR)

8.	a)	Discuss the effect of excitation on transient stability.	6 Marks
	b)	Explain the effect of excitation on generator power limits.	6 Marks

UNIT-V

9.		With neat diagrams, compare rotor angle stability and voltage stability.	12 Marks

(OR)

10.		What is voltage stability and voltage collapse? What are the factors effecting voltage instability and collapse?	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

RESTRUCTURED POWER SYSTEM

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. What are the key issues in deregulated power systems? Analyze the role of various entities in the new environment. 12 Marks

(OR)

2. Explain what "service unbundling" means in the electricity supply industry. State why it is necessary to carry it out and list out some of its characteristics and advantages of restructured power system. 12 Marks

UNIT-II

3. Discriminate monopoly and single buyer market model based on contractual arrangements. 12 Marks

(OR)

4. How the value of spot electricity price is determined? Also explain why spot electricity price vary with time and location. 12 Marks

UNIT-III

5. What is the importance of transmission pricing under open access condition? State and explain major components of transmission costs. 12 Marks

(OR)

6. Narrate the various issues involved in evaluating the transfer capabilities of the transmission system and explain the steps involved in TRM and CBM calculations. 12 Marks

UNIT-IV

7. What is meant by forecasting? Design a suitable load forecasting method to meet the day ahead market requirements. 12 Marks

(OR)

8. Apply the forecasting methods for pricing the electricity in competitive market. 12 Marks

UNIT-V

9. Interpret how the synchronous condenser and FACTS devices can be applied to provide voltage control service in a restructured power system. 12 Marks

(OR)

10. Explain in detail about the frequency regulation service in interconnected deregulated power system and analyze how this service is coordinated by restructured entities. 12 Marks

CODE No.:16MT20705 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

STATIC AND DIGITAL PROTECTION OF POWER SYSTEM

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Analyze the duality between phase and amplitude comparators using vector diagrams.	8 Marks
	b)	Outline the advantages of numerical relays.	4 Marks
		(OR)	
2.	a)	Distinguish between static and electromagnetic relays.	6 Marks
	b)	Figure out the importance of level detectors and replica impedances in static relays.	6 Marks

UNIT-II

3.	a)	With neat diagram, explain the phase splitting type amplitude comparator.	6 Marks
	b)	Explain the principle of operation of the Hall effect method phase comparator.	6 Marks
		(OR)	
4.	a)	With neat diagram, explain the circulating current type rectifier bridge comparator.	6 Marks
	b)	Discuss time -bias type phase comparator.	6 Marks

UNIT-III

5.	a)	Distinguish the different types of over current relays.	6 Marks
	b)	Design and explain the working of static definite time over current relay.	6 Marks
		(OR)	
6.		What is a directional over current relay? Describe the operating principle, constructional features and area of applications of reverse power or directional relay.	12 Marks

UNIT-IV

7.	a)	Illustrate static Mho relay characteristics using amplitude comparator.	7 Marks
	b)	What do you understand by out-of-step tripping relay? Discuss the operating principle of an out-of-step tripping relay.	5 Marks
		(OR)	
8.	a)	Explain the principle of out-of-step tripping and blocking relays.	6 Marks
	b)	Illustrate the effect of line length and source impedance on distance relays.	6 Marks

UNIT-V

9.	a)	Realize the Mho and offset Mho relays from the generalized mathematical expression.	6 Marks
	b)	Discuss the microprocessor based resistance relay.	6 Marks
		(OR)	
10.		How can numerical distance relaying algorithm be implemented on 8086 microprocessor explain with block diagram?	12 Marks

CODE No.:16MT20708 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

POWER QUALITY

[Electrical Power Systems, Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Discuss the following characteristics of power quality events. 6 Marks
   i) Short duration variations. ii) Long duration variations.
   b) Discuss in detail about transients. 6 Marks

(OR)

2. Discuss about the Computer Business Equipment Manufactures Associations (CBEMA). Explain about the events described in the curve. 12 Marks

UNIT-II

3. Explain the following terms. 12 Marks
   i) Harmonic distortion. ii) Current distortion.
   iii) Voltage distortion.

(OR)

4. Explain the following: 12 Marks
   i) Harmonic sources from commercial loads.
   ii) Harmonic sources from industrial loads.
   iii) Harmonic sources from residential loads.

UNIT-III

5. Explain how the capacitors can improve voltage regulation. 12 Marks

(OR)

6. Discuss various principles of regulating the voltage. 12 Marks

UNIT-IV

7. a) What is the importance of power quality monitoring? 5 Marks
   b) What are the steps involved in power quality monitoring? 7 Marks

(OR)

8. a) Explain the significance of power quality monitoring. What are the important power quality monitoring standards? 9 Marks
   b) What are the advanced measuring devices for power quality monitoring? 3 Marks

UNIT-V

9. Explain the necessity of custom power devices in distributed generation. 12 Marks

(OR)

10. Explain in detail about distributed generation interface to the utility. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

WEB TECHNOLOGIES

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Design a web page to maintain list of items using local storage concepts. 6 Marks
   b) Design a web page to drag and drop an object on a web browser using a mouse. 6 Marks

(OR)

2. Design a web page to load videos and to play the selected video. 12 Marks

UNIT-II

3. a) Write a code to display images of various animals, when you click on the name of the animal button. 6 Marks
   b) Write a JQuery code to perform the hiding and showing of HTML elements. 6 Marks

(OR)

4. Write a *JavaScript* code to validate the following fields of HTML form. 12 Marks
   i) User First Name - Allows only alphabets.
   ii) Date of Birth - Allows only valid date.
   iii) Email-ID - Allow valid email-id in userid@domainname formate.

UNIT-III

5. List the ways to create an array in PHP. Explain the various predefined methods to manipulate array elements. 12 Marks

(OR)

6. a) Define associative array. Write a code to implement associative array. 6 Marks
   b) Define type casting. Discuss type casting mechanism in PHP. 6 Marks

UNIT-IV

7. Write a PHP code to read the user id and password entered in the login form and authenticate with the values (user id and passwords) available in cookies. 12 Marks

(OR)

8. Write a PHP code to perform the following: 12 Marks
   i) To Fetch employee records.
   ii) To Update employee salary by 10% whose experience >15 years.

UNIT-V

9. a) Write an AJAX application to display current system date and time. 6 Marks
   b) Explain the creation of XMLHttpRequest object with a suitable example. 6 Marks

(OR)

10. Write AJAX application to read the content of the XML file. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

DETECTION AND ESTIMATION OF SIGNALS

[Digital Electronics and Communication Systems, Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. List out any four properties of receiver operating characteristics for simple binary hypothesis tests and explain Bayes risk decision criterion. 12 Marks

(OR)

2. a) Consider the conditional densities of an observation. 7 Marks

$$p\{z/m_1\} = 2e^{-2z} \quad z \geq 0$$
$$= 0 \quad z < 0$$
$$p\{z/m_2\} = e^{-z} \quad z \geq 0$$
$$= 0 \quad z < 0$$

Find the Neyman-pearson decision rule for $P\{d_2/m_1\}=1-e^{-1}$.

b) Design the Binary Decision Rule using probability of error criterion. 5 Marks

UNIT-II

3. a) Discuss the optimum decision device with neat block diagram for additive Gaussian noise. 7 Marks

b) Explain the importance of signal space diagram with suitable example. 5 Marks

(OR)

4. Consider a signal is one of the two waveforms $\mathbf{s_1(t)}$ and $\mathbf{s_2(t)}$ which are non-zero over the interval [0, T]. The observation is the sum of signal and the sample function from white Gaussian noise **n(t)**. 12 Marks

$\mathbf{Z = s(t) + n(t)}$.

Design integrating optimum receiver for likelihood ratio.

UNIT-III

5. Explain how radar signals are estimated by using different estimation techniques. 12 Marks

(OR)

6. a) Explain why mean square error estimator is called conditional mean estimator. 6 Marks

b) Find the MAP estimate of θ based on $\mathbf{Z = H\theta + n}$ if $H = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$ and **n** is Gaussian with zero mean and $\text{var}\{n\} = \begin{bmatrix} \sigma^2 & \rho\sigma^2 \\ \rho\sigma^2 & \sigma^2 \end{bmatrix}$ assuming that **θ** is also Gaussian with zero mean and variance **V**. 6 Marks

UNIT-IV

7.	a)	Distinguish between three different values of a performance measure.	6 Marks
	b)	State the asymptotic properties.	6 Marks

(OR)

8.		State and prove Cramer-Rao bound theorem.	12 Marks

UNIT-V

9.		Write the following: i) Concept of sufficient statistics. ii) Exponential families of distributions.	12 Marks

(OR)

10.		Derive the state estimate using Kalman filter for x(k) which is the time varying state, z(k) is the observation of the dynamic system in which w(k) and v(k) are plant noise and measurement noise.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

EMBEDDED SYSTEM DESIGN

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	Defend when microcontrollers can be used in embedded designs with references.	12 Marks
	(OR)	
2.	Classify embedded systems with examples.	12 Marks

UNIT-II

3.	Discuss various issues which are to be considered for choosing suitable software architecture.	12 Marks
	(OR)	
4.	Demonstrate function queue scheduling architectural model and with its pseudo code.	12 Marks

UNIT-III

5.	Contrast programming features of C to C++ with examples.	12 Marks
	(OR)	
6.	Illustrate the features of JAVA which were useful for embedded programming.	12 Marks

UNIT-IV

7.	Contrast round robin to priority based scheduling schemes.	12 Marks
	(OR)	
8.	Give an example for priority based scheduling technique. Explain in detail.	12 Marks

UNIT-V

9.	List and explain the tool chain and flow necessary for embedded software development.	12 Marks
	(OR)	
10.	List various embedded system design methodologies. Explain one method in detail.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

INFORMATION THEORY AND CODING TECHNIQUES

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Explain source coding theorem and develop equation for efficiency. 6 Marks
   b) Write short notes on Kraft's inequality. 6 Marks

(OR)

2. Consider that the two sources S_1 and S_2 emit messages x_1, x_2, x_3 and y_1, y_2, y_3 with the joint probability P(X,Y) as shown in the matrix. Calculate H(X), H(Y), H(Y/X), H(X/Y) and H(XY). 12 Marks

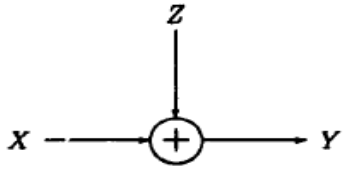
$$P(X,Y) = \begin{matrix} 3/40 & 1/.40 & 1/40 \\ 1/20 & 3/20 & 1/20 \\ 1/8 & 1/8 & 3/8 \end{matrix}$$

UNIT-II

3. a) Discuss briefly the importance of source coding and channel coding techniques in communication systems. 6 Marks
   b) Derive the Shannon channel coding theorem and a system has a band width of 5kHz and SNR of 28dB at the input to the receiver, find its information carrying Capacity. 6 Marks

(OR)

4. a) Compute the channel capacity of the following discrete memoryless channel: 7 Marks



where Pr{Z = 0) = Pr{Z = α} = 1/2. The alphabet for x is X = {0, 1} Assume that Z is independent of X.

   b) Describe the tradeoff between bandwidth and signal to noise ratio using Shannon-Hartley theorem. 5 Marks

UNIT-III

5. The parity check bits of a (8, 4) block code are generated by $c_5=d_1+d_2+d_4$, $c_6=d_1+d_2+d_3$, $c_7=d_1+d_3+d_4$, $c_8=d_2+d_3+d_4$ where d_1, d_2, d_3, d_4 are message bits. 12 Marks
   i) Develop the generator matrix and parity check matrix for this code.
   ii) Identify the minimum weight of this code.
   iii) Compute the error detecting capabilities of this code.

(OR)

6. a) Explain briefly about error detection and correction of linear block code for communications. 6 Marks

b) Define the terms Hamming distance and Hamming weight. 6 Marks

UNIT-IV

7. A rate 2/3 convolution code is described by g_1=[1011], g_2=[1101], g_3=[1010]. Construct the encoder, code tree, code trellis and state diagram corresponding to this code. 12 Marks

(OR)

8. a) Design an Encoder for (7, 4) binary cyclic code generator by $g(X) = 1+X+X^3$ and verify its operation using message vector (1 0 1 1). 6 Marks

b) Write the properties of cyclic codes. 6 Marks

UNIT-V

9. a) Apply Reed-Solomon code in encoding and decoding. 6 Marks

b) Write short notes on Coding and Interleaving applied to the compact disc digital audio system 6 Marks

(OR)

10. With an example discuss about feedback decoder. 12 Marks

CODE No.:16MT23804 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

LOW POWER CMOS VLSI DESIGN

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Briefly outline the needs for low power VLSI chips in real time. 12 Marks

(OR)

2. Explain in detail about CMOS leakage current. 12 Marks

UNIT-II

3. Paraphrase the Probabilistic Power analysis techniques. 12 Marks

(OR)

4. Discuss in detail about Monto Carlo Simulation techniques. 12 Marks

UNIT-III

5. Explain in detail about adjustable device threshold voltage with its applications. 12 Marks

(OR)

6. Explain local restructuring rules of transformation with relevant illustrations. 12 Marks

UNIT-IV

7. Illustrate the delay balancing in array multiplier with its architecture and explain. 12 Marks

(OR)

8. Summarize the power reduction in clock networks in special techniques of low power. 12 Marks

UNIT-V

9. Explain: 12 Marks
   i) Guarded evaluation. ii) Bus multiplexing.

(OR)

10. Explain the Flow Graph Transformation techniques with an example. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

WIRELESS COMMUNICATIONS

[Digital Electronics and Communication Systems, Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. If the calls are blocked, explain the techniques of providing queue to hold calls. 12 Marks

(OR)

2. Discuss the techniques of cell splitting and cell sectoring process to enable the improvement of coverage and capacity of cellular systems. 12 Marks

UNIT-II

3. Describe the free space propagation model and deduce the expression for received power. 12 Marks

(OR)

4. a) Express the importance about Two-ray Rayleigh fading model. 7 Marks
   b) Compare and contrast the techniques for direct pulse measurements and spread spectrum sliding correlator measurements. 5 Marks

UNIT-III

5. a) Explain linear equalizers with sufficient recursive equations and conditions. 6 Marks
   b) How to achieve minimum mean squared error in decision feedback equalization and why it is called as noise predictor? 6 Marks

(OR)

6. Consider the design of the U.S. digital cellular equalizer. If f = 900 MHz and the mobile velocity u = 80 km/hr, determine the following: 12 Marks
   i) the maximum doppler shift
   ii) the coherence time of the channel
   iii) the maximum number of symbols that could be transmitted without updating the equalizer, assuming that the symbol rate is 24.3k symbols/sec.

UNIT-IV

7. a) If W = 1.25MHz, R = 9600bps and a minimum acceptable Eb/No is found to be 1048, determine the maximum number of users that can be supported in a single-cell CDMA system using (i) omni-directional base station antennas and no voice activity detection (ii) 3 sectors at the base station and activity detection with a = 3/8. Assume the system is interference limited. 6 Marks
   b) Briefly explain about the following. 6 Marks
      i) Wireless Data Services.
      ii) Common Channel Signaling.

(OR)

8. Give a short notes on: 12 Marks
   i) Pure ALOHA. ii) Slotted ALOHA.
   iii) CSMA Protocols. iv) Reservation Protocols.

UNIT-V

9.		Briefly explain about the following. i) Peak to average power ratio ii) Frequency and time offset	12 Marks

(OR)

10.	a)	How OFDM can be implemented with IFFT and FFT.	5 Marks
	b)	Find the total system bandwidth with overlapping sub channels in multi-carrier modulation.	7 Marks

CODE No.:16MT23807 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

OPTICAL COMMUNICATIONS AND NETWORKS

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Distinguish between different types of index related and scattering related non-linearities in optical fibers and their effects. 6 Marks
   b) List out the structural dimensions and performance features of a typical glass multi-mode graded index optical fiber. Account for the need and materials used for coating and jacketing of such fibers. 6 Marks

(OR)

2. With neat sketches, discuss about soot deposition technique and MCVD process. 12 Marks

UNIT-II

3. a) List and explain the types of connectors available for interconnecting the optical fiber cables. 7 Marks
   b) Explain the types of misalignments caused while connecting two optical fibers. 5 Marks

(OR)

4. a) Draw the schematic and explain elastic-tube splicing technique of fibers. 6 Marks
   b) Mention principle requirements of a good connector design for optical fibers. 6 Marks

UNIT-III

5. With neat sketches, explain the principle of operation of Acousto-Optic Tunable filter. 12 Marks

(OR)

6. What is Lambertian pattern? Draw the hetero structure surface LED structure and explain the working principle. 12 Marks

UNIT-IV

7. Write short notes on different types of signal formats used in modulation. 12 Marks

(OR)

8. Explain how error detection and correction can be achieved by Reed-Solomon codes and also explain how the principle of interleaving can be used to correct large burst of errors. 12 Marks

UNIT-V

9. Explain the concept of Synchronization? In a PPS network how two pulse streams are aligned with Tunable Delays and Optical Phase Lock Loop. Explain in detail? 12 Marks

(OR)

10. Design the transmission layer using SDM, TDM and WDM approaches. 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

LOW POWER VLSI DESIGN

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Illustrate threshold voltage adjustments can be carried out for CMOS devices. Explain with the help of necessary equations. 12 Marks

(OR)

2. Predict the significance of threshold voltage on low power operation. 12 Marks

UNIT-II

3. Illustrate the realization of low-cost, medium- speed, 5-V digital Bi-CMOS process with neat sketch. 12 Marks

(OR)

4. Memorize about future trends and directions of CMOS/Bi-CMOS processes. 12 Marks

UNIT-III

5. Design and explain Bi-CMOS NAND gate. 12 Marks

(OR)

6. Sketch the 3-Input NAND gate implementation of the CCBICMOS and contrast with other BICMOS structures. 12 Marks

UNIT-IV

7. Discuss pipelining theme of flip-flops with neat sketch. 12 Marks

(OR)

8. Explain about the: 12 Marks
   i) Optimization theme.
   ii) Performance theme.
   iii) Pipelining theme of latches.

UNIT-V

9. Analyse different low power techniques for SRAM. 12 Marks

(OR)

10. Summarize power reduction in clock networks and low power techniques for SRAM. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

MIXED SIGNAL DESIGN

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain how charge injection effect is reduced in switched capacitor circuits.	6 Marks
	b)	Define clock feed through and discuss how this effect is reduced in switched capacitor circuits.	6 Marks
		(OR)	
2.		Give an example and show charge injection and clock feed through mathematical analysis.	12 Marks

UNIT-II

3.		Write a short notes on delay locked loops.	12 Marks
		(OR)	
4.		Give a brief description on non ideal effects of PLL.	12 Marks

UNIT-III

5.		Explain the concept of thermometer code converters and it's types.	12 Marks
		(OR)	
6.	a)	What is quantization noise? Explain in detail.	7 Marks
	b)	Explain the operation at D/A converters using hybrid converter.	5 Marks

UNIT-IV

7.	a)	Compare different types of A/D converters.	6 Marks
	b)	Draw the flow graph for the successive approximation.	6 Marks
		(OR)	
8.		Explain successive approximation A/D converter with a neat circuit diagram.	12 Marks

UNIT-V

9.		Draw the system architecture of delta - sigma A/D converters and explain the functionalities of each block.	12 Marks
		(OR)	
10.	a)	Show that the dynamic range can be increased by over sampling.	4 Marks
	b)	Discuss the stability and linearity issues associated with delta - sigma converters.	8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

NANOELECTRONICS

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Give the basic example of the electromagnetic wave. 4 Marks
   b) The simplest example of interference effect is given by superposition of two sinusoidal waves $U_1=B \sin \omega_2 (r,t)$, $U_2=B \sin \omega_2 (r,t)$ the resulting wave is sinusoidal wave of the form $U_3= B_{int} \sin \omega_3 (r,t)$. Find U_3 and B_{int}. 8 Marks

(OR)

2. a) Construct the wave trajectories by using the wave front. 8 Marks
   b) Describe the interaction of the electromagnetic wave with material. 4 Marks

UNIT-II

3. a) Explain the importance of the lattice matching. 4 Marks
   b) Describe different unit cell and lattice structure in details 8 Marks

(OR)

4. What are the three primary bonds in materials? Which is the strongest? Why? 12 Marks

UNIT-III

5. a) Explain how the formation of nanocrystals and nanoclusters differs from growth methods. 6 Marks
   b) Discuss the technique of optical lithography with the neat sketch. 6 Marks

(OR)

6. a) Discuss the steps involved in realizing and perfecting artificial nano structures. 8 Marks
   b) Write down the significance of top-down approach of the fabrication of nanostructures. 4 Marks

UNIT-IV

7. a) Derive the Fermi energy of one-dimensional electrons. 4 Marks
   b) Derive Hamiltonian relation for electron gas. 8 Marks

(OR)

8. a) Using the semi classical Bohr theory of the hydrogen atom, find the radius of an electron orbit in the ground state of an ion with positive charge $q = Ze$ placed in a medium with dielectric constant equal to €. 4 Marks
   b) Depict the energy level of quantum states of an electron in quantum dots. 8 Marks

UNIT-V

9. a) With layer sequence and device structure of a Si/SiO_2 double barrier RTD, explain the operating principle and technology of resonant tunneling diode. 6 Marks

b) Represent schematically the double barrier structure of a single electron transistor and describe its operating principle. 6 Marks

(OR)

10. a) Tabulate the number of active devices required for the implementation of digital functions using RTD, TTL, CMOS and ECL technologies and explain the applications of RTD at high frequency. 7 Marks

b) How the quantum cascade laser could be used in sensing and ultra fast free space communication applications? 5 Marks

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

PHYSICAL DESIGN AUTOMATION

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Explain about the design methodology based on top-down structural decomposition and bottom up layout reconstruction using Gajski's Y-chart.	12 Marks

(OR)

2.	a)	Specify combinatorial optimization decision problems in detail.	5 Marks
	b)	Develop an algorithm for an integer linear programming for directed graph model and explain with an example.	7 Marks

UNIT-II

3.	a)	List out the problem formulation with its applications.	5 Marks
	b)	Discuss the design rules and symbolic layout for the layout compaction.	7 Marks

(OR)

4.	a)	Discuss constructive and iterative placement approaches.	5 Marks
	b)	Asses the longest-path algorithm for DAGs with an example.	7 Marks

UNIT-III

5.		Assess the basic issues and terminology involved in the combinational logic synthesis.	12 Marks

(OR)

6.	a)	Define simulation. What are the components of a simulation?	6 Marks
	b)	Compare compiler-driven and event-driven simulation.	6 Marks

UNIT-IV

7.	a)	Evaluate assignment by interval and circular arc graph coloring.	8 Marks
	b)	Summarize high level transformations.	4 Marks

(OR)

8.	a)	Assess the assignment by clique.	7 Marks
	b)	Identify the scheduling algorithms and explain any two of them.	5 Marks

UNIT-V

9.		Compare the physical design cycle of FPGA's and MCM's.	12 Marks

(OR)

10.		Identify the purpose of multiple stage routing in an IC.	12 Marks

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

TESTING AND TESTABILITY

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Categorize the different levels of modeling. 12 Marks

(OR)

2. Define a structural model. Explain its structural properties. 12 Marks

UNIT-II

3. Analyze the logic fault models of single stuck fault model. 12 Marks

(OR)

4. Illustrate fault detection and redundancy. 12 Marks

UNIT-III

5. Assess the method of critical path tracing. 12 Marks

(OR)

6. Evaluate fault sampling. 12 Marks

UNIT-IV

7. Develop the ATPG vectors. 12 Marks

(OR)

8. Distinguish between compaction and compression. Give an example. 12 Marks

UNIT-V

9. Develop test strategies using: 12 Marks
   i) Generic boundary scan. ii) Full integrated scan.

(OR)

10. Discuss the concepts of BIST. 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

SYSTEM-ON-CHIP DESIGN AND VERIFICATION

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Distinguish WaterFall model of design flow and Spiral model of design flow. 12 Marks

(OR)

2. Model Top Down methodology of SoC design with an example. 12 Marks

UNIT-II

3. Describe in brief about strategies for managing interfacing issues. 12 Marks

(OR)

4. a) List the characteristics of a good IP. 6 Marks
   b) State the design process which involves in manufacturing a IP. 6 Marks

UNIT-III

5. Discuss the meaning of design verification and also the basic verification principle. 12 Marks

(OR)

6. Model a Bluetooth based SoC design. 12 Marks

UNIT-IV

7. What are the several co-verification methodologies in the market and discuss the basic methodology flow of the same. 12 Marks

(OR)

8. a) Initiate the step by step procedure of UART verification. 6 Marks
   b) Explain the RPS, limitation of RPS and several methodologies of reconfigurable RPS. 6 Marks

UNIT-V

9. Discuss the procedure of bus functional model based verification. 12 Marks

(OR)

10. a) Initiate problems to overcome to design communication based battery efficient system. 6 Marks
    b) Mention some steps to improve the battery efficiency of SoC based designs. 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

WIRELESS SENSOR NETWORKS

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Write the name of three types of mobility.	3 Marks
	b)	What is meant by scalability and maintainability?	6 Marks
	c)	What is meant by programmability?	3 Marks
		(OR)	
2.	a)	What are the mechanisms that form typical parts of WSNs?	5 Marks
	b)	Differentiate single hop and multi hop network with an example.	7 Marks

UNIT-II

3.	a)	Define adjacent - channel suppression.	4 Marks
	b)	Briefly explain about the sources of distortion.	8 Marks
		(OR)	
4.		What are wave propagation effects and list the effects of noise? Briefly explain each.	12 Marks

UNIT-III

5.	a)	What is hidden terminal problem?	4 Marks
	b)	Briefly specify IEEE 802.15.4 MAC protocol and explain whether the MAC protocols of 802.11 and Bluetooth be used for WSN. Justify.	8 Marks
		(OR)	
6.	a)	List and explain important classes of MAC protocols.	3 Marks
	b)	Elaborate on the requirements and design constraints for wireless MAC protocols.	9 Marks

UNIT-IV

7.	a)	Define and classify data aggregation methods and explain its categories with example.	8 Marks
	b)	What are the assumptions made for geographical routing?	4 Marks
		(OR)	
8.		What is Geographic routing? Explain it with a neat sketch.	12 Marks

UNIT-V

9.		Explain how PSFQ set up retransmission timer in each node for packet loss case.	12 Marks
		(OR)	
10.	a)	Write short notes on different types of sensing models.	6 Marks
	b)	What is difference between node coverage and area coverage? Taking these two parameters as base, explain detectability, worst case coverage and best case coverage.	6 Marks

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

ADAPTIVE SIGNAL PROCESSING

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Write the properties of Eigen values and Eigen vectors and prove at least two properties. 12 Marks

(OR)

2. Show that $\mathbf{J_{min}=\sigma^2_d-\sum|q_k^H P|^2/\lambda_k}$. 12 Marks

UNIT-II

3. The error performance of a real-valued filter, using a single tap weight **w** is defined by $\mathbf{J=J_{min}+r(0)(w-w_0)^2}$. 12 Marks
   i) Determine the bounds on the step size parameter **μ** of the steepest-descent algorithm used to recursively compute the optimum solution $\mathbf{w_0}$.
   ii) Determine the time constant of the filter.

(OR)

4. Derive the expression for minimum mean square error. 12 Marks

UNIT-III

5. a) Explain the structure and operation of LMS algorithm. 6 Marks
   b) Discuss briefly the concept of adaptive noise cancellation. 6 Marks

(OR)

6. Draw the block diagram of the generalized side lobe canceller and explain its operation. Also formulate the LMS algorithm for the adaptation of weight vector. 12 Marks

UNIT-IV

7. Explain theoretical and practical considerations of blind deconvolution. 12 Marks

(OR)

8. Give the representation of Riccati equation solver signal flow representation and explain. 12 Marks

UNIT-V

9. Sketch the backward predictor of order **m** and the corresponding predictor-error filter and explain. 12 Marks

(OR)

10. Discuss the angle-normalized versions of single co-efficient linear combiners for: 12 Marks
    i) forward prediction. ii) backward prediction.
    iii) joint-process estimation.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations October - 2018

SMART ANTENNAS

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Distinguish Switched beam antenna and Adaptive antenna. 12 Marks

(OR)

2. Derive the effects of mutual coupling. 12 Marks

UNIT-II

3. Classify and explain the conventional DOA estimation methods. 12 Marks

(OR)

4. Justify the uniqueness of subspace and conventional approach to DOA estimation. 12 Marks

UNIT-III

5. Discuss in detail about the Minimum Mean Square Error (MMSE). 12 Marks

(OR)

6. Appraise the use of LMS and RLS algorithms for adaptive beam forming. 12 Marks

UNIT-IV

7. Asses the Trellis-Coded Modulation (TCM) for adaptive arrays. 12 Marks

(OR)

8. Estimate BER for Trellis-Coded QPSK Modulation over Rayleigh fading channel with varying Doppler spreads. 12 Marks

UNIT-V

9. Assess the methods of Intersymbol and Co-channel suppression. 12 Marks

(OR)

10. Discuss in detail about space time processing. 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular Examinations October - 2018

LINEAR AND NONLINEAR CONTROL SYSTEMS

[Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Consider a unity feedback system with open loop transfer function, $G(S) = \frac{K}{S(S+3)(S+6)}$. CO3 12 Marks

   Design a lag-lead compensator to meet the following specifications:
   i) Velocity error constant = 80
   ii) Phase margin = 35 degree.

(OR)

2. a) Demonstrate the Bode plot approach for the design of control system. CO1 8 Marks
   b) Discuss the transfer function of lag compensator. CO1 4 Marks

UNIT-II

3. It is desired to place the closed loop poles of the following system at S = −3 and S = −4 by a state feedback controller with the control $u = -kx$. Determine the state feedback gain matrix and the control signal. CO2, CO3 12 Marks

$$\dot{x} = \begin{bmatrix} 0 & 1 \\ -1 & -3 \end{bmatrix} x + \begin{bmatrix} 0 \\ 2 \end{bmatrix} u \text{ and } y = \begin{bmatrix} 1 & 0 \end{bmatrix} x$$

(OR)

4. a) What is the necessary for arbitrary pole placement? CO1 4 Marks
   b) Determine the state matrix and output matrix of a RL series circuit with input voltage source V_i. CO1 8 Marks

UNIT-III

5. a) Show the graphical representation of stability, asymptotic stability and unstable. CO1 6 Marks
   b) Write a short note on stability in the sense of Lyapunov. CO1 6 Marks

(OR)

6. Analyze the stability of the system described by the following equation by Krasovaskii's theorem. CO2 12 Marks

$$\dot{x}_1 = -x_1$$
$$\dot{x}_2 = x_1 - x_2 - x_2^3$$

UNIT-IV

7. a) Write note on Phase plane and Phase trajectories. CO1 6 Marks
   b) Explain the procedure for construction of Phase trajectory. CO2 6 Marks

(OR)

8. Explain various characteristics of non linear systems. CO1 12 Marks

UNIT-V

9. The dynamics of a pendulum are given by CO3 12 Marks

$$\dot{x}_1 = x_2$$

$$\dot{x}_2 = -a[\sin(x_1 + \delta) - \sin\delta] - bx_2 + cu$$

Linearize the given system using Feedback linearization.

(OR)

10. Describe Feedback linearization method with relevant expressions. CO1 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular Examinations October - 2018

POWER ELECTRONICS IN RENEWABLE ENERGY SYSTEMS

[Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1.	a)	Analyze the V-I characteristics of solar cells at different insolation levels when connected in: i) Series. ii) Parallel.	CO2	6 Marks
	b)	Write a short note on PV cell interconnection.	CO1	6 Marks
		(OR)		
2.	a)	With the suitable diagram, explain and obtain the equivalent circuit model of single solar cell.	CO5	9 Marks
	b)	Investigate the effect of temperature on solar PV cell with the help of its V-I characteristics.	CO4	3 Marks

UNIT-II

3.		With the help of neat diagram, discuss in detail about types of PV systems available.	CO1	12 Marks
		(OR)		
4.		With the help of a neat circuit diagram, analyze the operation of grid connected PV system integrated with inverter to a high frequency transformer.	CO2	12 Marks

UNIT-III

5.	a)	Explain machine capacity factor and capacity utilization factor. Explain the principle of operation of doubly fed induction generator with neat diagram.	CO1	9 Marks
	b)	How are the wind energy conversion systems classified? Explain	CO1	3 Marks
		(OR)		
6.	a)	Label the schematic of Permanent Magnet Synchronous Generator and explain the construction and principle of operation in detail.	CO6	9 Marks
	b)	Give the performance of induction generator for wind energy conversion systems.	CO1	3 Marks

UNIT-IV

7.		Classify the types of wind power systems. Explain in detail about types of wind power systems available in India.	CO1	12 Marks
		(OR)		
8.	a)	With the help of block diagram, explain the pitch angle control mechanism of a PMSG.	CO6	6 Marks
	b)	Write the rules and regulations to connect a renewable energy system with the grid.	CO7	6 Marks

UNIT-V

9.	a)	Define hybrid system. Discuss the need for hybrid system and its range and type.	CO1	6 Marks
	b)	With a suitable converter system, design a standalone PV-Diesel hybrid system.	CO4	6 Marks
		(OR)		
10.		With the help of suitable diagram, explain switched PV- Diesel hybrid energy system and obtain the advantages and disadvantages of switched hybrid renewable energy system.	CO1	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular Examinations October - 2018

SOLID STATE AC DRIVES

[Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Justify, how the stator voltage control scheme is suitable for speed control of induction motors.	CO2	6 Marks
	b)	Compare constant and variable V/F controlling methods.	CO2	6 Marks
		(OR)		
2.	a)	With the neat diagram, explain the speed torque characteristic of slip ring induction motor in detail.	CO1	6 Marks
	b)	Draw and explain the equivalent circuit of induction motor.	CO1	6 Marks

UNIT-II

3.	a)	Justify, how the stator voltage control scheme is suitable for speed control of induction motors.	CO2	6 Marks
	b)	Explain the operation of six pulse VSI fed induction motor drive.	CO1	6 Marks
		(OR)		
4.	a)	Analyze the operation the dynamic and regenerative operations of voltage source inverter induction motor.	CO2	6 Marks
	b)	List out the points of comparison between VSI and CSI fed induction motor drives.	CO2	6 Marks

UNIT-III

5.		Discuss the operation of static scherbius drive with neat sketch.	CO1	12 Marks
		(OR)		
6.		Design the closed loop speed control of static scherbius drive of induction motor.	CO4	12 Marks

UNIT-IV

7.	a)	Apply the concept of indirect method of field oriented control in induction motor drive.	CO5	6 Marks
	b)	Compare the direct and indirect vector control schemes of induction motor.	CO2	6 Marks
		(OR)		
8.		Derive the torque expression of induction motor with stator and rotor flux.	CO1	12 Marks

UNIT-V

9.	a)	Explain the power factor control of synchronous motor drive.	CO1	6 Marks
	b)	Design a self-controlled synchronous motor drive employing load commutated inverter.	CO4	6 Marks
		(OR)		
10.		Examine, why the load commutated inverter fed synchronous motor	CO2	12 Marks

drive found suitable for high speed and high power applications.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular Examinations October - 2018

SOLID STATE DC DRIVES

[Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss the different modes of operation of an electrical drive.	CO1	6 Marks
	b)	Explain about the regenerative braking of DC motor.	CO1	6 Marks
		(OR)		
2.	a)	Explain the speed-torque conventions used in multi-quadrant operation.	CO1	6 Marks
	b)	Explain the constant torque and constant horse power operation of DC motor.	CO1	6 Marks

UNIT-II

3.	a)	Analyze the continuous current operation of a single phase fully controlled converter fed separately excited DC motor with near diagram.	CO2	6 Marks
	b)	Obtain the expression of performance parameter for single phase semi converter fed self excited DC motor.	CO1	6 Marks
		(OR)		
4.		Analyze the operation of a three phase full converter fed DC drive for firing angles $\alpha = 60^0$ and $\alpha = 90^0$.	CO2	12 Marks

UNIT-III

5.		Explain the steady state analysis of Class-E chopper fed DC drives.	CO1	12 Marks
		(OR)		
6.	a)	A DC Series motor fed from 400V DC source through a chopper has the parameters Ra = 0.05Ω, Rs = 0.07Ω and K = $5x10^{-3}$ Nm/amp^2. The average armature current of 200A ripple free. For a chopper duty cycle of 50%, determine: i) input power from the source. ii) motor speed. iii) motor torque.	CO3	6 Marks
	b)	Analyze the performance of Class A chopper fed DC drives.	CO2	6 Marks

UNIT-IV

7.		Draw the block diagram and illustrate the steps involved in designing the closed loop current control of DC motor using sensing and feedback elements.	CO4	12 Marks
		(OR)		
8.		Design a closed loop system for separately excited DC motor drive with speed and current controllers.	CO4	12 Marks

UNIT-V

9.		Write the program flow chart for constant horse power operations and explain the steps involved.	CO1	12 Marks
		(OR)		
10.	a)	What are factors to be considered while selecting digital controllers for DC drives?	CO1	6 Marks

b) Explain the concept of PLL based DC drives. CO1 6 Marks

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CODE No.:16MT28305 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular Examinations October - 2018

SPECIAL ELECTRICAL MACHINES

[Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is bifilar winding? How it is used in a variable reluctance stepper motor?	CO1	4 Marks
	b)	Show the rotor positions of a 4-phase VR stepper motor with 6 rotor teeth when it rotates in a counter clockwise direction. Assume two-phase ON mode of excitation of phase windings.	CO2	8 Marks
		(OR)		
2.	a)	A stepper motor has a resolution of 300 steps/revolution in single phase ON mode. If it is operated in half step mode, find the resolution and the number of steps required to turn the rotor through 60°.	CO4	5 Marks
	b)	Explain in detail the various configurations for switching the phase windings of a VR stepper motor.	CO1	7 Marks

UNIT-II

3.	a)	What is the need for sensing the rotor position of a SRM? Discuss in detail how an optical position sensor works.	CO1	6 Marks
	b)	Sketch the variation of inductance with rotor position of a three phase switched reluctance motor by ignoring fringing and saturation effects.	CO2	6 Marks
		(OR)		
4.	a)	Show that the torque developed in a switched reluctance motor is independent of the direction of the current.	CO2	7 Marks
	b)	Differentiate VR stepper motor from a switched reluctance motor.	CO1	5 Marks

UNIT-III

5.	a)	Explain in detail how closed loop control of synchronous reluctance motor is achieved using fast torque response control scheme.	CO1	6 Marks
	b)	A 3-phase, 4 pole, 60 Hz, 230V star connected synchronous reluctance motor has direct axis and quadrature axis synchronous reactances of 22.5Ω and 3.5Ω respectively. The load toque is 12.5N-m. The voltage to frequency ratio is maintained constant at rated value. Find: i) load angle. ii) line current. iii) power factor. Neglect rotational losses and armature resistance.	CO4	6 Marks
		(OR)		
6.	a)	Explain the constant direct axis current control of synchronous reluctance motor with the help of a block diagram.	CO1	6 Marks
	b)	Discuss the different rotor structures of synchronous reluctance motor and compare them.	CO1	6 Marks

UNIT-IV

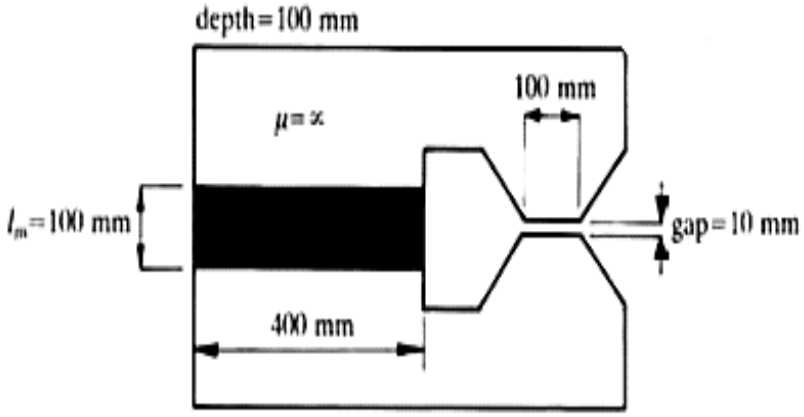
7. a) A permanent magnet DC motor has an armature resistance of 1.03Ω. It draws a current of 1.25A at no load with 50V supply and running at 2100 r.p.m. Find: CO4 6 Marks

i) speed-voltage constant.
ii) rotational losses.
iii) constant power when it runs at 1700 r.p.m at 48V supply.

b) Sketch the drive circuit for a three phase BLDC motor and explain how rotation is achieved in clockwise and anticlockwise directions. CO2 6 Marks

(OR)

8. a) Given figure shows a magnet used in Magnetic Resonance (MR) experiments for non-invasive medical diagnosis. Calculate the flux-density in the work space if the permanent magnet is ferrite with a remanent flux-density of 0.4T and a straight demagnetization characteristic with recoil permeability of 1.0. CO4 6 Marks



b) Explain the constructional details and principle of operation of BLDC square wave motor. CO1 6 Marks

UNIT-V

9. a) A vehicle is propelled by a linear induction motor. The motor has 100 poles with a pole pitch of 0.5m. Find the vehicle speed in kmph when the vehicle is running with a slip of 0.25 at a frequency of 50Hz. CO4 8 Marks

b) Explain the constructional details of linear synchronous motor with superconducting excitation system. CO1 4 Marks

(OR)

10. Explain the constructional details and principle of operation of Linear Induction Motor (LIM). Develop the thrust equation for LIM. Also deduce the equivalent circuit for LIM from the fundamentals. CO1 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Supplementary Examinations March - 2018

MOBILE COMPUTING

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Explain the term interference in the space, time, frequency and code domain. What are the countermeasures in SDMA, TDMA, FDMA and CDMA systems? 12 Marks

(OR)

2. a) How localization of a subscriber is carried out in GSM? 6 Marks
   b) Summarize the process of call handover when a mobile station moves. 6 Marks

UNIT-II

3. Explain in detail about traditional TCP mechanisms. 12 Marks

(OR)

4. a) Compare care-of- address and co-located care-of- address. 6 Marks
   b) Name the inefficiencies of mobile IP regarding data forwarding from a correspondent node to a mobile node. What are optimizations and what additional problems do they cause? 6 Marks

UNIT-III

5. a) Sketch the architecture for data dissemination and broadcast. 4 Marks
   b) Explain the reasons for communication asymmetry in mobile network. 6 Marks
   c) Draw the asymmetric communication architecture for data dissemination. 2 Marks

(OR)

6. a) Describe push-based data-delivery mechanism. 6 Marks
   b) Write the advantages and disadvantages of push-based data dissemination. 6 Marks

UNIT-IV

7. a) Sketch the architecture for data synchronization in mobile computing systems. 6 Marks
   b) Explain the terms replication, consistency, data conflict and discrepancy in data in mobile computing systems. 6 Marks

(OR)

8. a) Write a sample XML code which documents a search list of contacts in a mobile phone with contact names. 6 Marks
   b) Discuss how SyncML protocol engine is used. 6 Marks

UNIT-V

9. a) How are the applications developed for a Windows Phone 7 device? 6 Marks
   b) Describe the highlights of android. 6 Marks

(OR)

10. a) What are the packages in J2SE? 6 Marks
    b) Explain the APIs and class libraries in J2SE. 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Supplementary Examinations March - 2018

INTELLIGENT SYSTEMS

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Describe ANN architectures and its applications.	6 Marks
	b)	Discuss various learning strategies used in neural networks.	6 Marks
		(OR)	
2.		Discuss in detail about radial basis function network.	12 Marks

UNIT-II

3.	a)	Define membership function. List out the various features of membership function.	4 Marks
	b)	What is defuzzification? Discuss any two defuzzification methods in detail.	8 Marks
		(OR)	
4.		Discuss the following in detail. i) Rule base. ii) Inference.	12 Marks

UNIT-III

5.	a)	Discuss the constraints in Genetic algorithms.	4 Marks
	b)	Recognize the advantages and limitations of genetic algorithms.	8 Marks
		(OR)	
6.		Discuss the following crossover methods with examples. i) Single point crossover. ii) Two Point crossover. iii) Uniform crossover.	12 Marks

UNIT-IV

7.		Discuss the hybrid learning algorithm used in ANFIS in detail.	12 Marks
		(OR)	
8.	a)	Compare fuzzy and neural processing.	6 Marks
	b)	What are the constraints of ANFIS?	6 Marks

UNIT-V

9.		Compare particle swarm optimization with other evolutionary computing techniques in detail.	12 Marks
		(OR)	
10.		Develop the algorithm for particle swarm optimization.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Supplementary Examinations March - 2018

POWER SYSTEM STABILITY AND CONTROL

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Analyze the classical model of a multi machine system. 9 Marks
   b) Design a suitable controller to damp the inter area oscillations of interconnected power system. 3 Marks

(OR)

2. a) A synchronous machine is connected to an infinite bus through a transformer and a double circuit line. The infinite bus voltage is 1.0 p .u., the Direct Axis transient reactance of the machine is 0.2 p .u., the transformer reactance is 0.10 p .u. and the reactance if each of the transmission line is 0.40 p. u. all to a base of the machine rating of the synchronous machine. Initially the machine is delivering a power of 0.8 p .u. with a terminal voltage of 1.05 p .u. The inertia constant H=5MJ/MVA. All resistances are neglected. Find the swing equation. 6 Marks
   b) Starting from fundamentals, derive the mathematical model of single machine connected to infinite system. 6 Marks

UNIT-II

3. a) Develop the voltage equations of a synchronous machine used in stability studies. 9 Marks
   b) Discriminate Park's and Clark's transformation applied for electrical systems. 3 Marks

(OR)

4. a) Develop the state space model of one machine connected to an infinite bus 9 Marks
   b) List the various tools to simulate the power system stability concepts. 3 Marks

UNIT-III

5. a) Derive the state space modal of a Type 1 continuously acting regulator and excitation system. 6 Marks
   b) Describe the state space model of excitation system compensation with block diagram. 6 Marks

(OR)

6. a) With the help of neat diagram, explain a non-continuously acting regulator system. 6 Marks
   b) List out various tools to simulate the excitation systems. 6 Marks

UNIT-IV

7. a) What is the significance of Lead compensation filter on stability? 6 Marks
   b) Explain the approximate model of the complete Exciter-Generator system with block diagram. 6 Marks

(OR)

8. a) With neat block diagram, explain about Power System Stabilizer. 6 Marks
   b) Draw the simulated voltage response for Type I excitation control system. 6 Marks

UNIT-V

9. What is Lyapunov function? Obtain it for a simple power system such as SMIB systems. 12 Marks

(OR)

10. a) Explain how to achieve control of voltage instability. 6 Marks
    b) What is voltage stability? List the factors affecting voltage instability and voltage collapse. 6 Marks

CODE No.:16MT20704 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Supplementary Examinations March - 2018

RESTRUCTURED POWER SYSTEM

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Explain the structure of deregulated electric industry. How does it differ from vertically integrated electric industry? 12 Marks

(OR)

2. Explain the various methods of transmission pricing in new environment. 12 Marks

UNIT-II

3. Discriminate wholesale and retail competition market models with relative advantages and disadvantages. 12 Marks

(OR)

4. What are the salient features of Block forward market and develop a model for such a market? 12 Marks

UNIT-III

5. Explain the accurate method of ATC calculations with relevant equations. Draw the flowchart for the computation of ATC. 12 Marks

(OR)

6. A certain network has 3 lines which are currently carrying 60MW, 50MW and −80MW respectively. The PTDF factors for a transaction between node ***m*** and ***n*** are 0.25, −0.3, 0.25 respectively. If maximum capacity of each line is 100 MW in either direction, what is the ATC between the nodes ***m*** and ***n***? 12 Marks

UNIT-IV

7. What are the various impacting factors that will influence the electricity price based on load forecast? 12 Marks

(OR)

8. Explain the construction principle of forward price curves based on time frame and price. 12 Marks

UNIT-V

9. Explain how the following ancillary services are carried out in restructured power system. 12 Marks

   i) Spinning reserve. ii) Voltage control.

(OR)

10. Explain in detail about Black start capability services in restructured power system. 12 Marks

CODE No.:16MT20705 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Supplementary Examinations March - 2018

STATIC AND DIGITAL PROTECTION OF POWER SYSTEM

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. With neat block diagram, explain numerical relay. List out its advantages and disadvantages. 12 Marks

(OR)

2. a) Explain the basic block diagram of a static relay. 6 Marks
   b) Write the significance of replica impedances in static relays. 6 Marks

UNIT-II

3. a) Discuss about hybrid comparators. 6 Marks
   b) Discuss switched distance schemes. 6 Marks

(OR)

4. What are multi input comparators? Construct the three input amplitude comparator. 12 Marks

UNIT-III

5. a) Explain definite time over current relay with neat block diagram. 6 Marks
   b) With appropriate circuit diagram, discuss the principle of operation of rectifier bridge type differential relay. 6 Marks

(OR)

6. a) Develop the block diagram and detailed circuit of an Instantaneous over current relay. 6 Marks
   b) Explain Duo bias transformer differential Protection with neat diagram. 6 Marks

UNIT-IV

7. What is an impedance relay? Explain its operating principle. Discuss how it is realized using: 12 Marks
   i) amplitude comparator. ii) phase comparator.

(OR)

8. Analyze the effect of power swings and fault impedance on the performance of impedance and reactance relays. 12 Marks

UNIT-V

9. Discuss how mho relay characteristics can be realized using instantaneous amplitude comparison technique. Develop its microprocessor block diagram and explain its characteristics with different values of θ. 12 Marks

(OR)

10. a) Develop the block diagram and flow chart of the microprocessor based resistance relay. 6 Marks
    b) Justify how a quadrilateral distance relay can be realized using microprocessor. 6 Marks

CODE No.:16MT20708 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Supplementary Examinations March - 2018

POWER QUALITY

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Explain the following steady state disturbances. 12 Marks
   i) Magnitude. ii) Unbalance. iii) Harmonics. iv) Flicker

(OR)

2. a) What is power quality and explain the power quality evaluation procedure? 6 Marks
   b) Discuss the responsibilities of suppliers and end users of electric power. 6 Marks

UNIT-II

3. a) List out the various effects of equipment due to harmonics. Explain briefly. 6 Marks
   b) What are the various classifications of harmonic sources and explain briefly about it? 6 Marks

(OR)

4. a) Explain briefly about fundamentals of harmonics generation and waveform distortion. 6 Marks
   b) Explain the power system response characteristics under the presence of harmonics. 6 Marks

UNIT-III

5. Explain the principle of line drop compensator as a utility voltage regulator. 12 Marks

(OR)

6. Explain the role of shunt and series capacitors in regulating the voltage. 12 Marks

UNIT-IV

7. a) Discuss in brief about the various networking reconfiguration type custom power devices. 5 Marks
   b) Explain the working principle of unified power quality conditioner in detail. 7 Marks

(OR)

8. a) Bring out the important characteristics of power quality variations. 6 Marks
   b) Explain the steps involved in power quality monitoring. 6 Marks

UNIT-V

9. Explain the impact of distributed generation on low voltage networks. 12 Marks

(OR)

10. Discuss the advantages and disadvantages of the common three phase transformer connections used for interconnection of distributed generation. 12 Marks

CODE No.:16MT22505 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Supplementary Examinations March - 2018

WEB TECHNOLOGIES

[Computer Science, Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Design a web page with fields user id, password and a submit button. Consider the following while writing a HTML code. 12 Marks
   i) Table to include fields.
   ii) Background image with repeatable option.
   iii) Font styles and sizes.

(OR)

2. a) Design a web page to allow the web page or website to show the web page notifications. 6 Marks
   b) Discuss the features of HTML5. 6 Marks
   i) Web Workers. ii) 2D Graphics.

UNIT-II

3. a) Discuss the ***jQuery*** methods used to create animation effects. 6 Marks
   b) Design a web page to enable the user to add or remove square boxes using ***jQuery*** manipulators. 6 Marks

(OR)

4. a) Write a ***JavaScript*** that shows an animating object to move right and left directions. 6 Marks
   b) List out the various methods of String object with neat syntax. 6 Marks

UNIT-III

5. How Inheritance is implemented in PHP? Explain. 12 Marks

(OR)

6. Develop a PHP code that implements Interfaces and Abstract classes. 12 Marks

UNIT-IV

7. a) Discuss the transaction support of MySQL using PHP. 6 Marks
   b) List the PHP authentication methodologies used to authenticate users. 6 Marks

(OR)

8. Write a PHP code to authenticate users by reading user id and password from the Login form. Compare user id and password values with user id's and passwords stored at database. If he/she is a valid user (i.e., user id and password match) then welcome him/her by name (first name + last name), otherwise display a message stating that an unauthorized user. 12 Marks

UNIT-V

9. Write AJAX application to read the content of the XML file. 12 Marks

(OR)

10. a) Describe the problems with existing web technologies. 6 Marks
    b) Explain the AJAX web application model with neat diagram. 6 Marks