SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Regular Examinations May - 2015

ENGINEERING PHYSICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the 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)	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)	What are matter waves? Show that the wavelength λ associated with a particle of mass m and when kinetic energy E is given by $= \frac{h}{\sqrt{2mE}}$.	6 Marks
	b)	Explain the Fermi-Dirac function F(E) for electrons in a metal and write the effect of temperature on F(E).	8 Marks
		(OR)	
6	a)	How can you differentiate the metals, semiconductors and insulators on the basis of Band theory of solids?	7 Marks
	b)	Using the Kronig-Penny model, show that for P << 1, the energy of lowest energy band is $E = \frac{h^2 P}{ma^2}$.	7 Marks

UNIT-IV

7	a)	Discuss different types of dielectric polarization and explain electronic polarizability in atoms and obtain an expression for electronic polarizability in terms of the atomic radius.	8 Marks
	b)	Define Piezoelectric effect and mention few applications of Piezoelectric materials.	6 Marks
		(OR)	
8	a)	What is Hall effect? Give an elementary theory of Hall effect to determine mobility of charge carriers. Mention the important uses of the Hall effect.	8 Marks
	b)	Explain the principle and working of LED and give few applications of LED.	6 Marks

UNIT-V

9	a)	What is the Meissner effect?	4 Marks
	b)	Distinguish between Type-I and Type-II Superconductors.	4 Marks
	c)	Discuss the Josephson's effects.	6 Marks
		(OR)	
10	a)	Describe the Synthesis of nano films by pulsed laser deposition.	10 Marks
	b)	Write the properties of nanomaterials.	4 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Regular Examinations May - 2015

ENGINEERING CHEMISTRY

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write a note on electrical insulators.	7 Marks
	b)	Define the terms i) Dielectric constant ii) Dielectric loss iii) Dielectric strength.	7 Marks
		(OR)	
2	a)	What are conducting polymers? How they are classified? Write important applications of conducting polymers.	7 Marks
	b)	Explain about amperometric sensors. Give its applications.	7 Marks

UNIT-II

3	a)	Explain with a chemical reaction how soap reacts with water containing $MgCl_2$ dissolved salts. A sample of hard water contains the following dissolved salts per liter. $Ca(HCO_3)_2$ = 4.86 mg, $Mg(HCO_3)_2$ = 5.84mg, $CaSO_4$ = 6.80mg, $MgSO_4$ = 8.4mg, CO_2 = 4.4mg and SiO_2 = 2.6 mg. Calculate Temporary and Permanent hardness.	7 Marks
	b)	Explain how water is purified by using ion selective membranes.	7 Marks
		(OR)	
4	a)	How the impurities present in water are removed by ion-exchange process.	7 Marks
	b)	Write different methods involved in Municipal water treatment.	7 Marks

UNIT-III

5	a)	What are secondary cells? Describe the construction of Ni-Cd cell. Write cell reactions and its applications.	7 Marks
	b)	What is meant by cathodic protection? Explain about impressed current cathodic protection.	7 Marks
		(OR)	
6	a)	What are electrochemical series? Explain their usefulness in the design of electrochemical cell.	8 Marks
	b)	Write short notes on fuel cells by taking suitable example.	6 Marks

UNIT-IV

7	a)	What is meant by lubricant? How are lubricants classified? Give examples.	7 Marks
	b)	Explain the viscosity and viscosity index of lubricant with special reference in the selection of good lubricant.	7 Marks
		(OR)	
8	a)	How fuels are classified? What are important characteristics of a good fuel? Explain with suitable example.	8 Marks
	b)	What is meant by synthetic petrol? How synthetic petrol is prepared by Fischer - Tropsch process.	6 Marks

UNIT-V

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

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Regular Examinations May - 2015

ENGINEERING MATHEMATICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Solve: $\frac{dy}{dx} + x\sin 2y = x^3\cos^2 y$. 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) Verify if $u = 2x - y + 3z$, $v = 2x - y - z$, $w = 2x - y + z$ are functionally dependent and if so, find the relation between them. 7 Marks

b) Using Lagrange's Multipliers, find the dimensions of a rectangular box opens at the top of the maximum capacity with surface area 432 sq. meters 7 Marks

(OR)

4 a) Sketch the curve for the equation $y = (x - 1)(x - 2)(x - 3)$. 7 Marks

b) Find the radius of curvature at the point $\left(\frac{3a}{2}, \frac{3a}{2}\right)$ of the curve $x^3 + y^3 = 3axy$. 7 Marks

UNIT-III

5 a) Find the volume when the loop of the curve $y^2 = x(2x - 1)^2$ revolves about the x-axis. 7 Marks

b) Evaluate the following by changing into polar coordinates 7 Marks

$$\int_0^4 \int_0^{\sqrt{16-y^2}} y^2\sqrt{x^2 + y^2}\,dx\,dy$$

(OR)

6 a) Change the order of integration in $\int_0^a \int_0^a \frac{x\,dy\,dx}{x^2 + y^2}$ and hence evaluate it. 7 Marks

b) Evaluate $\iiint_V (x + y + z)\,dxdydz$ where V volume of the cylinder $x^2 + y^2 = 1$, $z = 0$ and $z = 4$ by transforming into cylindrical coordinates. 7 Marks

UNIT-IV

7 a) Find the Laplace transformation of $f(t) = |t-1| + |t+1|,\ t \geq 0$. 7 Marks

b) Use convolution theorem to evaluate $L^{-1}\left\{\frac{s}{(s+2)(s^2+9)}\right\}$. 7 Marks

(OR)

8 a) Find $L\left\{\int_0^t \frac{e^{-t}\sin t}{t}\,dt\right\}$. 7 Marks

b) Solve $\frac{d^2x}{dt^2} + 9x = \cos 2t$, if $x(0) = 1$, $x\left(\frac{\pi}{2}\right) = -1$. 7 Marks

UNIT-V

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

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

(OR)

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

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

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Regular Examinations May - 2015

MATHEMATICAL METHODS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

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

b) b) For what values of λ and μ the simultaneous equations $x + y + z = 6$; $x + 2y + 3z = 10$; $x + 2y + \lambda z = \mu$, have i) no solution ii) unique solution iii) infinite solutions. 7 Marks

(OR)

2 a) Find the eigen values and eigen vectors of the matrix $\begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$ 7 Marks

b) Reduce the quadratic form $6x^2 + 3y^2 + 3z^2 - 4xy - 2yz + 4zx$ to the sum of squares. Also write the nature of the quadratic form. 7 Marks

UNIT-II

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

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

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

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

(OR)

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

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

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

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

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

UNIT-III

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

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

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

(OR)

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

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

UNIT-IV

7 a) Find the Fourier series to represent function $f(x) = \frac{1}{4}(\pi - x)^2, 0 < x < 2\pi$ 7 Marks

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

(OR)

8 a) Find $Z^{-1}\left(\frac{3z^2 + z}{(5z-1)(5z+2)}\right)$. 7 Marks

b) Obtain the Half Range Sine series for $f(x) = ax + b$, in (0,1) 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 u_0. Its ends are suddenly cooled to 0°C and are kept at that temperature. Find the temperature function u (x, t). 7 Marks

(OR)

10 a) Form the partial differential by eliminating the arbitrary function from the relation: $z = y f(x) + x g(y)$. 7 Marks

b) The vibrations of an elastic string is governed by the partial differential equation: $\frac{\partial^2 u}{\partial t^2} = \frac{\partial^2 u}{\partial x^2}$. The length of the string is π and the ends are fixed. The initial velocity is zero and the initial deflection is $u(x,0) = 2(\sin x + \sin 3x)$. Find the deflection $u(x,t)$ of the vibrating string for $t < 0$. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech (SVEC14) Regular Examinations May - 2015

PROGRAMMING IN C AND DATA STRUCTURES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw a flow chart that to find the reverse of a given number.	7 Marks
	b)	What is a Compiler? Differences between Compiler and an Interpreter.	7 Marks
		(OR)	
2	a)	Describe the process of Compilation and Executing High-level Language programs.	7 Marks
	b)	Write advantages and limitations of using flowcharts.	7 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)	Discuss multiway selection statement with an example program.	7 Marks
	b)	How to construct an infinite loop using while loop, for loop?	7 Marks

UNIT-III

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

UNIT-IV

7	a)	Explain array of structures and structure within a structure with examples.	7 Marks
	b)	Write a C program to read and display a text from the file.	7 Marks
		(OR)	
8	a)	Explain the concept of pointers. Also explain operations on pointers and array of pointers.	7 Marks
	b)	Write a C program to maintain a record of "n" student details using an array of structures with four fields (Roll number, Name, Marks, and Grade). Each field is of an appropriate data type. Print the marks of the student given student name as input.	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

CODE No.:14BT1ES02 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Regular Examinations May - 2015

PROBLEM SOLVING AND COMPUTER PROGRAMMING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the characteristics of an algorithm?	7 Marks
	b)	Define different symbols used in flow chart.	7 Marks
		(OR)	
2	a)	What is a token? List out different tokens used in C.	7 Marks
	b)	What is the use of identifiers? What are its characteristics?	7 Marks

UNIT-II

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

UNIT-III

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

UNIT-IV

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

UNIT-V

9	a)	Define a file and discuss about reading, writing, opening and closing of a file.	7 Marks
	b)	Write a C program to read data from the keyboard, write in to a file and again read the same data from the file and display on the screen.	7 Marks
		(OR)	
10	a)	Distinguish between arrays and linked list.	5 Marks
	b)	Write a routine to insert an element in a linked list.	9 Marks

CODE No.:14BT1HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Regular Examinations May - 2015

TECHNICAL ENGLISH

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 During his childhood, many people influenced Abdul Kalam in a positive way. Write a note on who they are and how they influenced him. 14 Marks

(OR)

2 According to Albert Mehrabian "93% of our communication is done through non-verbal communication." Justify. 14 Marks

UNIT-II

3 Did N. R. Narayana Murthy inspire you through his speech? How? 14 Marks

(OR)

4 Write a note on the traits of a good listener and implications of effective listening. 14 Marks

UNIT-III

5 What kind of a man is "The Director" according to you as sketched by the author Amitav Ghosh? Give examples from his deeds and words to support your answer. 14 Marks

(OR)

6 What is the importance of confidence, clarity and fluency to become a good speaker? Can these be considered as paralinguistic features? Why / Why not? 14 Marks

UNIT-IV

7 In pursuit of knowledge, C.V. Raman with his unswerving devotion and unceasing service had contributed immensely to the promotion of science and research in India. Outline the subject of research Raman conducted in Raman Research Institute. 14 Marks

(OR)

8 Write brief notes on the following. 14 Marks
a) Intensive Vs Extensive reading; b) Efficient reading;
c) Active and passive reading

UNIT-V

9 "An artist's heart is his head." Explain. 14 Marks

(OR)

10 As a fresh graduate in engineering you have decided to establish a manufacturing unit in your hometown. For this purpose, you have decided to avail yourself of the liberalized loan facility under the self-employment scheme. Therefore, you wish to submit an unsolicited technical proposal for the manufacture of an item of your choice seeking loan from State Industrial Development Corporation, Andhra Pradesh, Hyderabad. Draft this proposal to be sent to the Director, SIDC, Hyderabad, inventing the necessary details. 14 Marks

CODE No.:14BT10301 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Regular Examinations May - 2015

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

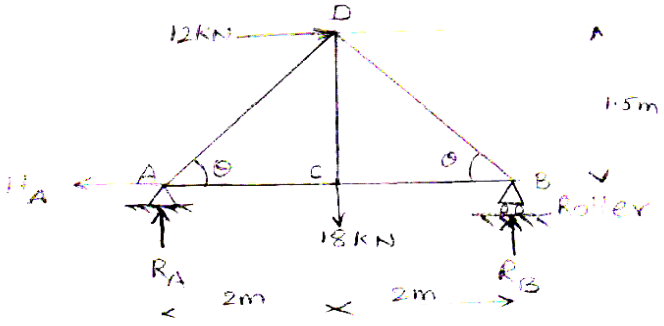
1 Determine the resultant of the following forces acting at origin O. 14 Marks
F_1=200N passing through (2,3), F_2=400N passing through (-2,3),
F_3=600N passing through (2,-3), Also find the resultant moment of all these forces about a point (4,4).

(OR)

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

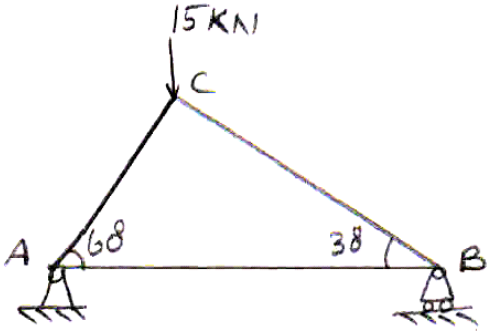
UNIT-II

3 a) Explain the term support reactions. What are different types of supports? 4 Marks
b) Determine the forces in the truss shown in figure which carries a horizontal load of 12KN and a vertical force load 18KN. 10 Marks



(OR)

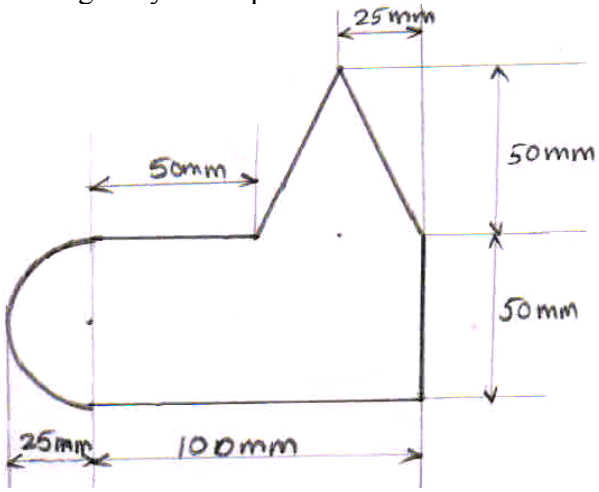
4 The truss ABCD shown in figure has a span of 5 m. It is carrying a load of 15 KN at its apex. Find the forces in the members AB, BC and AC using the method of sections. End A is hinged and B is supported in rollers. 14 Marks



UNIT-III

5 a) State and prove parallel axis theorem. 6 Marks

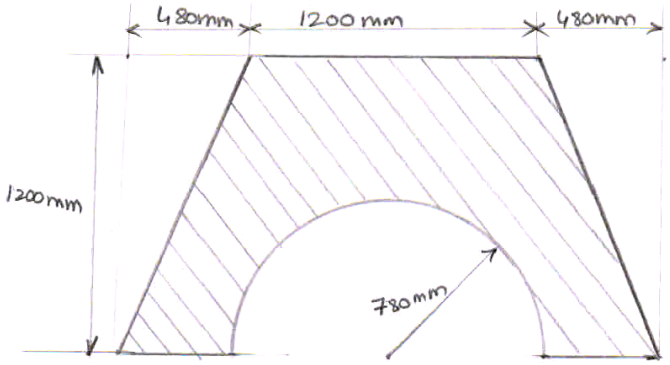
b) Determine the centre of gravity of the plane uniform lamina shown in the figure. 8 Marks



(OR)

6 a) Distinguish between centroid and centre of gravity 2 Marks

b) The cross section of a plain concrete culvert is as shown in the figure. Determine the moment of inertia about the horizontal centroidal axis. 12 Marks



UNIT-IV

7 A bullet of mass 0.5 kg moving with a speed of 30 m/sec was fired into a wooden block of weight 200 N, resting on an incline, and inclined 30° to the horizontal. If the coefficient of friction is 0.35, find the distance the block travels along the inclination in the upward direction. 14 Marks

(OR)

8 The acceleration "a" of a particle expressed in cm/sec^2 is given by a = 90 - 5x^2, where x is the distance traveled by the particle in cm. Determine the velocity of the particle for x = 5cm. Also find the maximum velocity attained by the particle. 14 Marks

UNIT-V

9 A lift of total weight 600 kg moves upward with a constant acceleration and travelling a distance of 3 m attains a velocity of 3m/s. Determine the tension in the cable holding the lift during this accelerated motion. At this instant, the lift is provided a deceleration so that it comes to rest in 3 seconds. Determine the reaction at the floor of the lift, which a man weighing 50 kg, inside the lift will feel under his feet. 14 Marks

(OR)

10 a) Derive the expressions for velocity and acceleration of a particle subjected to a force as a function of velocity. 7 Marks

b) Explain the equations of equilibrium of a rigid body experiencing a planar motion. 7 Marks

1. **CODE No.:10BT1BS01**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ENGINEERING PHYSICS

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

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

Answer any FIVE questions
All questions carry equal marks

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

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) Describe with suitable diagrams relating to the construction and action of P-N junction diode.
b) An N-type semiconductor is to have a resistivity 10 ohm/cm. Calculate the number of donor atoms which must be added to achieve this. Give μ_n = 500 cm^2/volt-sec.

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

5. a) What are the basic requirements of an acoustically good hall?
b) Write briefly on Sabine's formula and its importance in architectural acoustics.

6. a) Write a note on BCS theory.
b) What is the frequency of electromagnetic waves radiated from a Josephson junction, if the voltage drop at the junction is 650 **μV** ?
c) Write a few applications of superconductors.

7. a) What is the principle of optical fiber? What are acceptance angle and acceptance cone?
b) Determine the numerical aperture of a step index fiber when the core refractive index $\mathbf{n_1}$=1.5 and the cladding refractive index $\mathbf{n_2}$=1.48. Find the maximum angle for entrance of light if the fiber is placed in air.
c) What is total internal reflection?

8. a) Write a note on fabrication of nano materials. What are the properties of carbon nanotubes?
b) Explain the methods of preparation of nano materials. What are the applications of carbon nanotubes?

CODE No.:10BT1BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ENGINEERING CHEMISTRY

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are liquid crystals? How are they classified? Write any three applications of liquid crystals.
b) Describe, how viscosity of thin lubricating oil is determined by Redwood viscometer.

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

3. a) Describe calomel electrode with the electrochemical equation.
b) Explain the working principle of hydrogen-oxygen fuel cell.

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

5. a) Explain the Langmuir theory of adsorption.
b) Write a note on miscelles.

6. a) Describe the properties of nanomaterials.
b) Write a note on the methods of nanomaterial synthesis.

7. a) What is chemical-shift? Explain the chemical-shift with suitable examples.
b) Write the principle of flame photometry and mention how it is useful in the analysis of alkali metal ions in solution.

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 May - 2015

ENGINEERING MATHEMATICS

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

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 ^{0}C and placed in air at 10 ^{0}C. After one hour its temperature is 60 ^{0}C. How much additional time is required for it to cool to 30 ^{0}C?

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

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

3. a) Find the maximum and minimum distances from the origin to the curve $3x^2 + 4xy + 6y^2 = 140$.

b) Calculate $\frac{\partial(u,v)}{\partial(r,\theta)}$, if $u = 2axy, v = a(x^2 - y^2)$. Where $x = r\cos\theta$, $y = r\sin\theta$.

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 **$ay^2 = x^3$**

5. a) Find the Laplace Transform of $f(t) = |t - 1| + |t + 1|, t \geq 0$.

b) Find the inverse Laplace transform of i) $\frac{s}{s^4 + 4a^4}$ ii) $\log\frac{s^2+1}{s(s+1)}$.

6. a) Solve by using Laplace Transforms : $y^{11} - 3y^1 + 2y = 4t + e^{3t}$, when $y(0) = 1, y^1(0) = -1$.

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

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

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

8. a) A fluid motion is given by $v = (y\sin z - \sin x)i + (x\sin z + 2yz)j + (xy\cos z)k$. Is the motion irrotational ? If so, find the velocity potential.

b) Apply Green's theorem to evaluate $\int_C [(2x^2 - y^2)\,dx + (x^2 + y^2)\,dy]$, where C is the boundary of the area enclosed by the X-axis and the upper-half of the circle $x^2 + y^2 = a^2$.

CODE No.:10BT1BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

MATHEMATICAL METHODS

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

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

Answer any FIVE questions
All questions carry equal marks

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

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

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

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

3. a) Using Regula-Falsi method, find the real root of the equation $2x - \log_{10} x - 6 = 0$ correct to three decimal places.

b) By the method of least squares fit a parabola of the form $y = a + bx^2$ for the following data.

x	2	4	6	8	10
y	3.07	12.85	31.47	57.38	91.29

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

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

x	5	6	9	11
y	12	13	14	16

5. a) A rod is rotating in a plane, the following table gives the angle θ (radians) through which the rod has turned for various values of the time t (seconds).

t :	0	0.2	0.4	0.6	0.8	1.0	1.2
θ :	0	0.12	0.49	1.12	2.02	3.20	4.67

Calculate the angular velocity '**ω**' of the rod , when t = 0.6 second.

b) A solid of revolution is formed by rotating about the x-axis, the area between x-axis and the curve through the points.

x:	0.00	0.25	0.50	0.75	1.00
y:	1.0000	0.9896	0.9589	0.9089	0.8415

from x = 0 to x = 1, estimate the volume of the solid formed by revolution by Simpson's rule.

6. a) Solve $y' = 2x - y$, $y(1) = 3$ at $x = 1.5$ by taking $h = 0.1$ using Euler's Method.

b) By Runge-Kutta 4th order, find y (0.2), given that $y' = (y - x) / (y + x)$ with $y(0) = 1$.

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

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

8. a) Find a Fourier series to represent $f(x) = x^2$ in the interval $(0, 2\pi)$.

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

CODE No.:10BT1BS05

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

MATHEMATICS FOR BIOTECHNOLOGISTS

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) (i) Find the term independent of x in the expansion of $\left(\frac{\sqrt{x}}{3} - \frac{3}{x^2} \right)^{10}$.

(ii) If $a^x = b^y = c^z$ *and* $y^2 = xz$ *then prove that* $\log_b a = \log_c b$.

b) Show that the vectors $\bar{a} = 2i - 2j + k$, $\bar{b} = 3i - 2j + k$, $\bar{c} = 2i + j - 4k$ form a right angled triangle also finds other angles.

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

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

3. a) Evaluate $\int (1 + x^2) \cos 2x \, dx$.

b) Find the area of region bounded by the curves ***y = x² + 2, y = x, x = 0 and 3***.

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

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

5. a) Solve $(D^2 + 4D + 3)y = 2(x + 1) + \sin x$.

b) Solve $\frac{d^2y}{dx^2} + 4y = \tan 2x$ by the method of variation of parameters.

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

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

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

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

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

b) Evaluate the divergence of the vector filed $\vec{u} = \left(\frac{x^2}{z} \right)\hat{i} - 3\hat{j} + yz\hat{k}$ at the point (–1, 9, –1).

❀ ❀ ❀

CODE No.:10BT1EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

PROBLEM SOLVING AND COMPUTER PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Compare and contrast client/server environment with distributed computing.
b) Explain few general problem solving strategies.

2. a) Write a short note on precedence and associativity of operators.
b) What is Side effect? Give example expressions with and without side effects.

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 print the first 'n' Fibonacci numbers. How many Fibonacci numbers that your program can print.
b) Write a C program for converting a given decimal number into its equivalent binary number.

5. a) Write a C program using arrays to print a table displaying indices and corresponding squares.
b) Write a C Program to sort the given array of integers using Bubble Sort Technique.

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

7. a) Write a C program for accessing structure members using structure pointer variable.
b) What are different arithmetic operations which can be performed on pointer variables?

8. a) Write a C program to copy the contents of one file to another file.
b) Write a C program to implement push and pop operations of a stack using arrays.

CODE No.:10BT10101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define the following: i) Free body diagram, ii) Lami's Theorem, iii) Varignon's Principle and iv) Principle of force transmissibility.

b) A lever of length '*l*' that is subjected to a vertical force F exerts a contact force on a circular cylinder (radius r, weight G). The weight of the lever may be neglected. All surfaces are smooth (Fig.1). Determine the contact force between the cylinder and the floor if the height 'h' of the step is equal to the radius r of the cylinder.

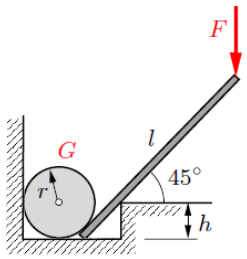


Fig.1

2. a) Distinguish between

i) a roller support and a hinged support

ii) uniformly distributed load and uniformly varying load on a beam.

b) A beam AB of span 6 m is hinged at A and supported on rollers at end B and carries load as shown in Fig. 2. Determine the reactions at A and B.

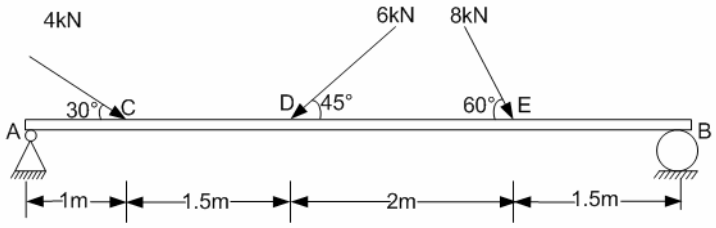


Fig.2

3. a) What do you understand by a 'Redundant Frame'?

b) A cantilever truss of 3m span is loaded as shown in Fig.3. Find the forces in the various members of the truss, using method of joints.

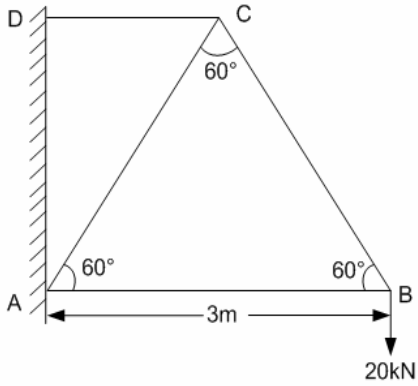


Fig.3

4. a) What is perfect frame and imperfect frame? Write the advantage of method of sections as compared to method of joints.

b) Determine the forces in members BD, CD, and CE of the Fink truss shown in Fig. 4.

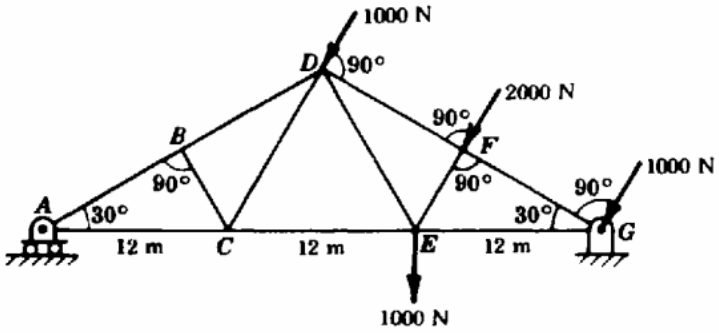


Fig.4

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

b) Determine centroid of the for the area bounded by the parabola $y^2 = 4ax$ and the lines $y = 0$, $x = b$ shown in Fig. 5.

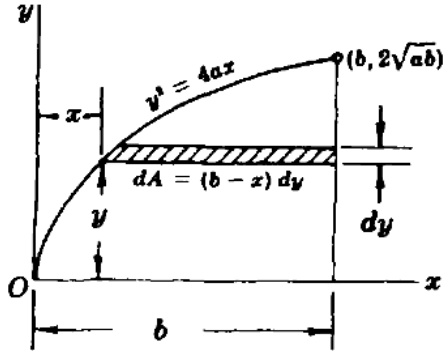


Fig. 5

6. Calculate the moment of inertia of the composite section shown in Fig 5 with respect the centroidal x-axis and y-axis.

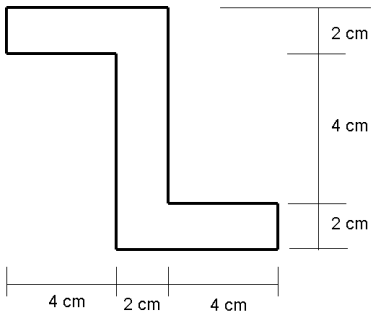


Fig. 5

7. A bus starts from rest at point A and accelerates at the rate of 0.9 m/s^2 until it reaches a speed of 7.2 m/s. It then proceeds with the same speed until the brakes are applied. It comes to rest, at point B, 18 m beyond the point where the brakes are applied. Assuming uniform acceleration, determine the time required for the bus to travel from A to B. Distance between A and B is 90 m.

8. An elevator weighing 5000 N is ascending with an acceleration of 3 m/s^2. During this ascent, its operator whose weight is 700 N is standing on the weighing pan placed on the floor. What is the weighing pan reading? What will be the total tension in the cables of elevator during this motion?

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

PROBABILITY AND STATISTICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove Multiplication theorem.
b) Consider the experiment of tossing a coin three times. Let X be the number of heads. Construct the probability distribution of X. Find the mean and the variance of the distribution.

2. a) In a large consignment of electric bulbs 10% are defective. A random sample of 20 is taken for inspection. Find the probability that
i) All are good bulbs.
ii) Atmost there are three defective bulbs.
iii) Exactly there are three defective bulbs.

The weekly wages of 1000 workmen are normally distributed around a mean of Rs.70 with a standard deviation of Rs.5. Estimate the number of workers whose weekly wages will be i) Between Rs.69 and Rs.72 ii) Less than Rs.69 iii) More than Rs.72.

3. The following table shows the respective heights X and Y of a sample of 12 fathers and their oldest sons respectively.

X	65	63	67	64	68	62	70	66	68	67	69	71
Y	68	66	68	65	69	66	68	65	71	67	68	70

i) Find the coefficient of correlation and interpret
ii) Fit a regression line of Y on X.

4. a) A random sample of size 2 is taken from the population 1, 2, 3, 4, 5 and 6 without replacement. Find (i) the mean of the population (ii) the standard deviation of the population (iii) the mean of the sampling distribution of means (iv) the standard deviation of the sampling distribution of means
b) Explain the following;
i) Null hypothesis ii) Critical region iii) Type I and Type II errors.

5. a) The mean lifetime of a sample of 100 fluorescent light bulbs produced by a company is computed to be 1570 hours with a standard deviation of 120 hours. If μ is the mean lifetime of all the bulbs produced by the company. Use a significance level of 0.05.
i) Test the hypothesis $\mu = 1600$ hours against the alternative hypothesis $\mu \neq 1600$ hours.
ii) Find the ***P*** value of the test and interpret the result.

Two kinds of thread are being compared for strength.50 pieces of each type are tested under similar condition. Brand A had an average tensile strength of 78.3 Kg with standard deviation of 5.6 Kg ,while brand B had an average tensile strength of 87.2 Kg with standard deviation of 6.3 Kg. Assume the two population variances are equal. Test the equality of the two population means. Use 0.05 significance level.

6. a) A sample of size 16 has mean 30 with standard deviation of 5. Assuming normality test the Test the hypothesis $\mu = 32$ hours against the alternative hypothesis $\mu \neq 32$.

b) In a shop study, a set of data was collected to determine whether or not the Proportion of defectives produced was the same for workers on the day, evening and night shifts. The data collected are shown

Status	**Shift**		
	Day	Night	Evening
Defectives	45	55	70
Non defectives	905	890	870

Use a 0.05 level of significance and chi-square to determine if the status of defectives is independent of the shifts.

7. a) Explain clearly the basis and working of Control Charts for mean and range. What are the basic assumptions and uses of $\overline{X}$ and R charts?

b) Explain the estimation of σ from the mean range of samples of constant size drawn during a continuous production process. What are the other methods of estimating σ ?

8. In a public telephone booth having just one phone, the arrivals are considered to be Poisson with average of 15 per hour. The length of a phone call is assumed to be distributed exponentially with mean 3 minutes. Find the

a) Average number of customers in the waiting line.
b) Average number of customers waiting in the queue.
c) Probability that a person arriving at the booth will have to wait in the queue.
d) Expected waiting time of a customer in the system.
e) Expected waiting time of a customer in the queue.

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

ENVIRONMENTAL SCIENCES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the environmental segments?
b) Why the public awareness is required on environment.

2. a) Explain soil erosion. How it happens? Give its types.
b) What is nuclear energy? Discuss its advantages and disadvantages.

3. a) Explain the term ecosystem.
b) Explain the process of energy flow in the ecosystem.

4. a) Explain the in-situ and ex-situ conservation of biodiversity.
b) Write note on man and wildlife conflicts.

5. a) Explain the major water pollutants and their effect on the Environment.
b) Explain the process of composting as applied for the management of Municipal Solid Waste (MSW).

6. a) Discuss on waste land reclamation.
b) What is meant by ozone depletion? Explain the causes.

7. a) How far the Water Act effectively controls the water pollution in India.
b) What are the powers and functions of Pollution Control Boards.

8. a) How the HIV/AIDS spreads and how it can be prevented.
b) What is environmental ethics? How it is important to protect the Environment?

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

OPTIMIZATION TECHNIQUES

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the term objective function surface
b) What are the differences between a constraint surface and composite constraint surface.

2. a) A beam of uniform rectangular cross section is to be cut from a log having a circular cross section of diameter 2**a**. The beam has to be used as a cantilever beam (the length is fixed) to carry a concentrated load at the free end. Find the dimensions of the beam that correspond to the maximum tensile (bending) stress carrying capacity.

b) Find the maxima and minima, if any, of the function $f(x) = \dfrac{x^4}{(x-1)(x-3)^3}$.

3. Three food products are available at costs of Rs.10, Rs.36 and Rs.24 per unit respectively. They contain 1000, 4000 and 2000 calories per unit respectively and 200, 900 and 500 protein units per unit respectively. Minimum cost diet should contain atleast 20,000 calories and 3000 units of protein. Formulate and solve the given problem by LP simplex method.

4. State various steps involved in Vogel's approximation method and use it to obtain an Initial Feasible Solution of the transportation problem.

Warehouses	Stores				Availability
	I	II	III	IV	
A	5	1	3	3	34
B	3	3	5	4	15
C	6	4	4	3	12
D	4	-1	4	2	19
Requirement	21	25	17	17	80

5. a) Find the minimum of the function $f(x) = 0.65 - \dfrac{0.75}{1+x^2} - 0.65x\tan^{-1}\dfrac{1}{x}$.

Using the quadratic interpolation method with an initial step size of 0**.**1.

b) Find the value of x in the internal (0, 1) which minimizes the function $f = x(x-1.5)$ to within ± 0.05 by Fibonacci method.

6. Perform two iterations of steepest descent (Cauchy) method to minimize the function $f(x_1, x_2) = 100(x_2 - x_1^2)^2 + (1 - x_1)^2$ from the starting point $\begin{Bmatrix} -1.2 \\ 1.0 \end{Bmatrix}$.

7. Explain interior penalty method.

Minimize $\frac{1}{4}(x_1+1)^4+x_2$. subject to $x_1-x_2 \geq 0$; $x_2 \geq 0$ using exterior penalty function method.

8. a) What is dynamic programming? Explain its optimality criterion.
b) Solve the following linear programming problem by dynamic programming:
Max. $Z=2x_1+3x_2$ Subject to $x_1-x2 \leq 1$; $x_1+x_2 \leq 3$ and $x_1 \geq 0$; $x_2 \geq 0$.

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Mechanical Engineering, Computer Science and Engineering, Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. What do you mean by law of demand? State the factors affecting the demand for durable consumer products.

2. Write a detailed note on Internal and External Economies of scale.

3. Briefly explain different pricing methods and their relative uses.

4. Explain the salient features of New Economic Policy 1991.

5. The following are the balances extracted from the books of Groover. Prepare a Trial Balance.

Particulars	**Amount (Rs.)**
Capital	Rs.50,000
Purchases	70,000
Prepaid Expenses	500
Sales	1,00,000
Stock	20,000
Furniture	45,000
Sundry Debtors	15,000
Sundry Creditors	10,000
Sundry Expenses	3,000
Cash at Bank	6,450
Petty Cash	50

6. From the following ledger balances prepare a profit and loss account of Genetic Sports Company Limited for the year ending 31-12-2011.

Particulars	**Amount (Rs.)**
Rents Paid	3,000
Salaries	4,000
Commission Paid	1,000
Discount Allowed	1,000
Advertisements	1,000
Telephone charges	1,000
Interest Paid on loans	2,000
Bad debts	1,000
Legal Fee	1,000
Printing and stationery	1,000
Office Insurance	1,000
Postage	500
Repairs	500

The gross profit was 40% of sales and sales amounted to Rs.1,00,000.

7. No project is acceptable unless the yield is 10% cash in flows of a certain projects. Cash out flows are given below:

Year	**0**	**1**	**2**	**3**	**4**	**5**
Cash out flow (Rs.)	1,50,0000	30,000	-	-	-	-
Cash out flow (Rs.)	-	20,000	30,000	60,000	80,000	30,000

The salvage value at the end of the 5th year is Rs.40,000. Calculate the NPV.

8. Differentiate between computerized and manual accounting illustrating with suitable examples.

CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define i) Surface tension ii) Capillarity iii) Vapour pressure iv) Compressibility.
b) A cylinder of diameter 15 cm and weight 90 N moves a distance of 12.5 cm in a lubricated pipe. The clearance between the cylinder and pipe is 2.5×10^{-3} cm. The cylinder decelerates at a rate of 0.6 m/s^2 when the speed is 6 m/s. Find the viscosity of oil used for lubricating pipe.

2. a) What is Euler's equation of motion? How will you obtain Bernoulli's equation from it?
b) A pipe line carrying oil of specific gravity 0.8, changes in diameter from 300 mm at a position A to 500 mm diameter to a position B which is 5 m at a higher level. If the pressures at A and B are 19.62 N/cm^2 and 14.91 N/cm^2 respectively, and the discharge is 150 liters/s, determine the loss of head and direction of flow.

3. a) What do you understand by pipes in series, pipes in parallel and equivalent pipe?
b) A venturimeter is used for measurement of discharge of water in horizontal pipe line. If the ratio of upstream pipe diameter to that of throat is 2:1, upstream diameter is 300 mm, the difference in pressure between the throat and upstream is equal to 3 m head of water and loss of head through the meter is one-eighth of the throat velocity head, calculate the discharge in the pipe.

4. a) 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.
c) A nozzle of 5 cm diameter delivers a stream of water at 20 m/s perpendicular to a plate that moves away from the jet at 5 m/s. Find the force on the plate, the work done and the efficiency of the jet.

5. a) Explain the types of water power development.
b) The hydro power plant has a turbine with the following details. Find the power developed and what is the specific speed of the turbine. Hydraulic efficiency = 90%, Net head = 65 m, discharge = 15 m^3/sec, speed = 100 r.p.m.

6. a) Explain the working principle of a Francis turbine with help of a neat diagram.
b) A Kaplan turbine develops 2250 kW under a net head of 5.5 m and with overall efficiency of 87%. The draft tube has a diameter of 2.8 m at its inlet and has an efficiency of 78%. In order to avoid cavitation, the pressure head at entry to the draft tube must not drop more than 4.5 m below atmosphere. Calculate the maximum height at which the runner may be set above the tail race level.

7. a) What is Cavitation and Thoma's Cavitation factor?
b) Derive an expression for the specific speed of a hydraulic turbine.

8. a) How the centrifugal pumps are classified and derive an expression for the minimum starting speed of a centrifugal pump.
b) A single acting reciprocating pump running at 50 r.p.m. delivers 0.01 m^3/s of water. The diameter of piston is 200 mm and stroke length is 400 mm. Determine the coefficient of discharge and percentage slip.

CODE No.:10BT40101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

STRUCTURAL ANALYSIS - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive expressions for the principal stresses in strained body in terms of σ_x, σ_y and τ_{xy}.
b) At a point in a strained material the normal stresses on two planes at right angles are 80 N/mm^2 (tensile) and 60 N/mm^2(compressive) . Find the resultant intensity of stress on a plane inclined at 30^0 to the axis of minimum principal stress.

2. A beam AB of span 6 m is simply supported at the ends. The beam is subjected to a concentrated load of 5 kN at a distance of 2 m from left support A. The beam is also loaded with a uniformly distributed load of 3 kN/m from the centre of span to right end B. Find the deflection at centre of span and slope at the left end A. Take E = 2 **X** 10^5 N/mm^2 and I = 2100 cm^4.

3. A beam AB of span 8 m is simply supported at the ends. The beam is subjected to a point load of 10 kN at 6 m from the left support A. Using area moment method, calculate deflection under the point load and slope at the ends A and B. Take I = 7 **X** 10^8 mm^4 and E = 2 **X** 10^5 N/mm^2.

4. Determine the section of a cast-iron hollow cylindrical column 3.6 m long with both ends firmly built-in, if it carries an axial load of 775 kN. The ratio of internal to external diameter is 5/8. Use a factor of safety of 3.5. Assume the crushing strength of the material as 545 MPa and Rankine's constant = 1/1600 for both ends pinned case.

5. The load on a bolt consists of an axial pull of 20 kN together with a transverse shear of 10 kN. Determine the diameter of the bolt according to (i) maximum principal stress theory (ii) maximum shear stress theory, (iii)maximum strain theory and (iv) strain energy theory. Elastic limit in tension is 285 N/mm^2 and a factor of safety of 3 is to be applied. Take **μ =0.3**.

6. Determine the principal moments of inertia for an unequal 'L' angle section of size 80 **X** 50 **X** 8 mm.

7. Analyse the fixed beam shown in Fig.1 and draw shear force and bending moment diagrams. Find the distance of the points of contra-flexure from supports.

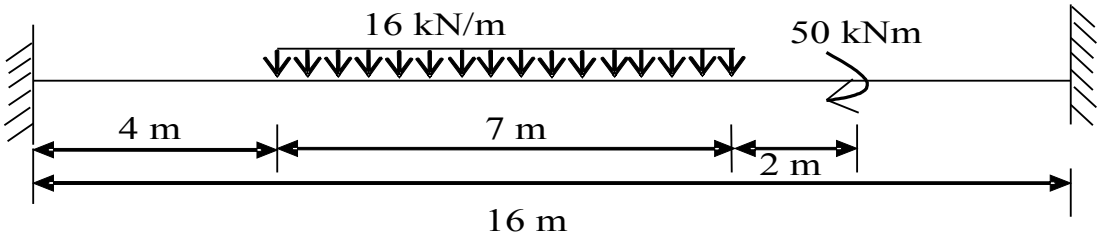


Fig.1

8. Analyse the continuous beam shown in Fig.2, using theorem of three moments, and draw shear force and bending moment diagrams. Locate and find the distances of the points of contra-flexure from supports. Draw elastic curve.

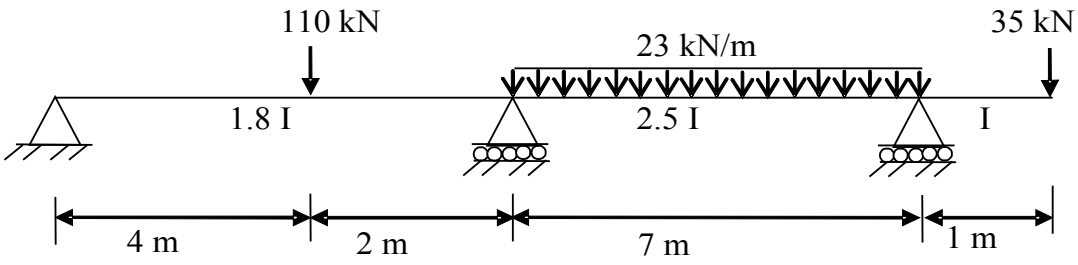


Fig.2

CODE No.:10BT40102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

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) What is the most economical section of an open channel? Derive the conditions for rectangular channel of best section.
b) A 8m. wide channel conveys 15 m^3/sec of water at a depth of 1.2m
Calculate : i) Specific energy of the flowing water
ii) Critical depth, critical velocity and minimum specific energy.

3. a) What is the essential difference between gradually varied flow and rapidly varied flow? Illustrate with neatly drawn sketches.
b) Derive an expression for loss of energy head for a hydraulic jump.

4. a) Water is flowing through a pipe at the end of which a nozzle is fitted. The diameter of the nozzle is 100mm and the head of water at the centre nozzle is 100mm. Find the force exerted by the jet of water on a fixed vertical plate. The coefficient of velocity is given as 0.95.
b) A jet of water of 2.5cm diameter, moving with a velocity of 10m/sec, strikes a hinged square plate of weight 98.1N at the centre of the plate. The plate is uniform thickness. Find the angle through which the plate will swing.

5. a) Explain the different heads and efficiencies of a hydraulic turbine.
b) A reaction turbine works at 450 r.p.m. under a head of 120m. 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.
Determine :
i) the volume flow rate
ii) the power developed and
iii) the hydraulic efficiency . Assume whirl at outlet to be zero.

6. a) Define the terms 'unit power', 'unit speed' and 'unit discharge' with reference to a hydraulic turbine. Derive the equation for the unit discharge.
b) What is a surge tank? What are the different types of surge tanks? Explain briefly.

7. a) Explain different operating characteristic curves of a centrifugal pump with neat sketches.
b) Two geometrically similar pumps are running at the same speed of 1200 rpm. The first one has an impeller diameter of 0.35 m and lifts water at 20 lps against a head of 18 m. Determine the size of the impeller and head developed by the second pump to deliver half of the discharge.

8. a) Explain the terms load factor and utilization factor. Explain their practical applications with examples.
b) Differentiate between i) Storage and pondage ii) Base load plant and peak load plant.

CODE No.:10BT40103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

REINFORCED CEMENT CONCRETE STRUCTURES - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) From first principles, derive the expression for 'Moment of Resistance of an under reinforced section' for a 'singly reinforced beam' as per working stress method.
b) A simply supported reinforced concrete beam of size 250 mm × 500 mm is provided with 4 bars of 20 mm diameter as tension reinforcement. If the effective span of the beam is 4 m, find the amount of concentrated load it can support at its mid-span. Use M25 concrete and Fe 500 grade steel. Use working stress method of design.

2. a) Explain Characteristic strength, Characteristic loads and partial safety factors.
b) How Limit state method differs from Working stress method.
c) A R.C.C. beam of section 300 mm **x** 500 mm is reinforced with 4 bars of 16 mm diameter with an effective cover of 50 mm. The beam is simply supported over a span of 5 m. Find the maximum permissible UDL on the beam. Use M20 grade concrete and Fe 415 grade steel.

3. a) Find the design constants in Limit state method for M25 grade concrete and Fe 415 grade steel.
b) A rectangular reinforced concrete beam of width 400 mm and effective depth 600 mm is to be designed to support an ultimate moment of 600 kN.m. Using M20 grade concrete and Fe 415 grade steel, design suitable reinforcements in the beam at an effective cover of 60mm.

4. a) Briefly explain the IS code provisions for the design of simply supported beams.
b) A simply supported reinforced concrete beam of size 300 mm **x** 500 mm effective depth is reinforced with 4 bars of 16 mm dia. HYSD steel of Fe 415 grade. Determine the anchorage length of the bars at the simply supported end if it is subjected to a factored shear force of 350kN at the centre of 300 mm wide masonry support. The concrete mix is of M20 grade.

5. a) Briefly explain how the torsional moment is taken care in the design of beams.
b) A simply supported beam of 8 m span is reinforced with 6 bars of 25 mm diameter at center of span and 50 **%** of the bars are continued into the supports. Check the development length at supports assuming M 20 grade concrete and Fe 415 grade steel. The beam supports a characteristic total load of 50 kN/m.

6. a) Design a R.C.circular column section to carry a factored load of 2400 kN. Provide helical reinforcement as transverse reinforcement. Use M20 grade concrete and Fe 415 grade steel.
b) Design a sloping footing for a reinforced concrete column of size 500 mm **x** 500 mm transmitting an axial service load of 2000 kN. The safe bearing capacity of the soil at the site is 200kN/m^2. Use M20 grade concrete and Fe 415 grade steel.

7. a) Briefly explain the structural behaviour of one-way and two-way slabs.
b) Design a simply supported slab to cover a hall having internal dimensions, 4.2 m × 6.5 m. The slab is supported masonry walls of 230 mm thick. Assume the live load as 3kN/m^2 and finish load of 1 kN/m^2. Assume M25 concrete and Fe415 grade steel. Assume that the corners are free to lift. Adopt Limit state method. Assume mild exposure condition. Sketch the reinforcement details.

8. A simply supported one-way slab 180 mm thick having an effective span of 4.3 m is reinforced with 10 mm diameter bars spaced at 125 mm c/c at an effective cover of 25 mm. The slab is subjected to a live load of 4 kN/m^2 and a surface finish of 1 kN/m^2. Use M25 concrete and Fe 500 grade steel. Assume ultimate shrinkage strain = 0.0003 and creep coefficient = 1.6. Estimate the only the long-term deflection.

CODE No.:10BT40104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

CONSTRUCTION, PLANNING AND PROJECT MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain 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) Explain the methods of damp proofing for walls, basements, floorings and roofs.
b) What is paint? Explain briefly different types of paints.

4. a) Explain the development of personnel department and authority policy.
b) Explain the workmen's compensation act of 1923 and the subsequent amendments.

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 steps in development of network.
b) Draw the arrow diagram for the following situation.
i) A and D start at the same time.
ii) F follows A
iii) K follows A but precedes L
iv) G follows D but precedes J
v) G follows F but precedes H
vi) M follows H but precedes L
vii) J and L terminate the same time.

8. a) Differentiate between PERT network and CPM network. Illustrate your answer by drawing the two types of networks for a project.
b) Analyze with respect to resources the network shown in figure 1. Values are in days.

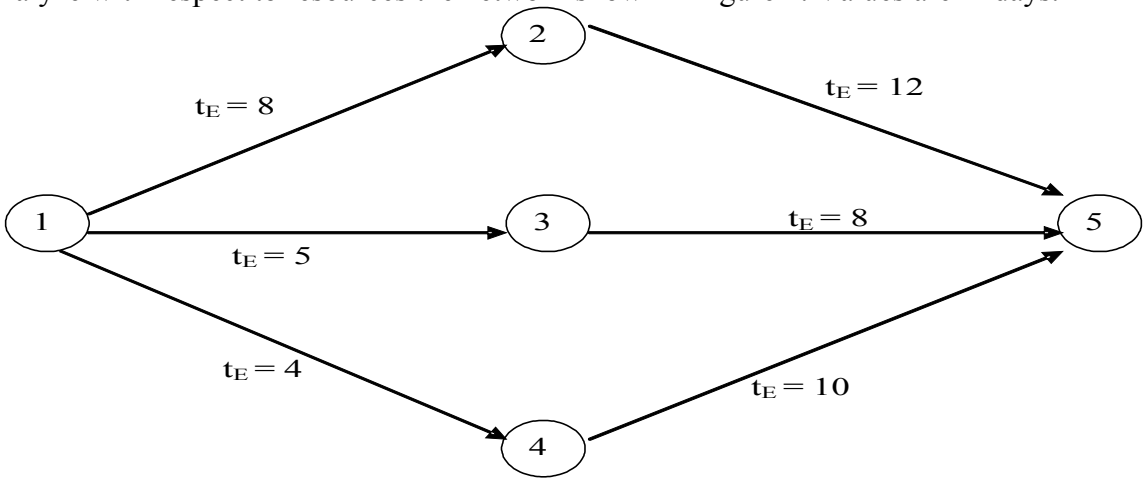


Figure 1

CODE No.:10BT40201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

NETWORK ANALYSIS AND SYNTHESIS

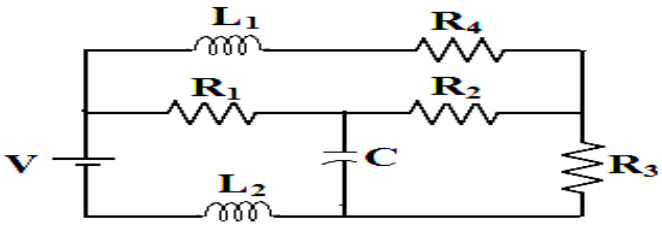
[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the terms: Oriented graph, Reduced Incidence matrix and Tie-set matrix with an example.

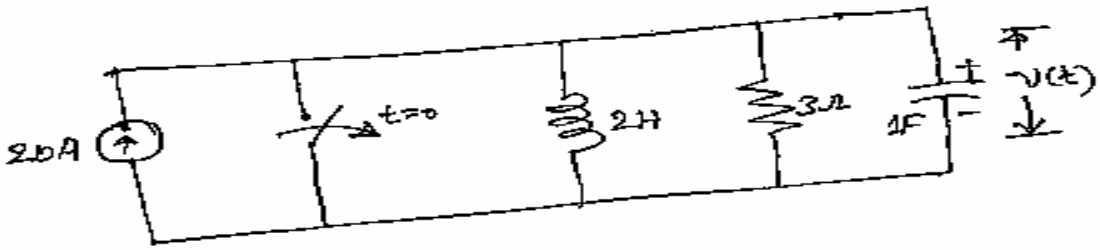
Find the dual circuit for the circuit shown below.



2. a) Explain half wave symmetry of a function.

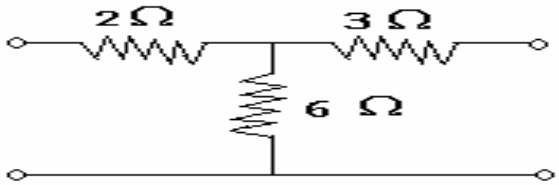
b) The applied voltage and resulting current in a two-element series circuit are
$V = 50 + 50 \sin 5000\mathbf{t} + 30 \sin 10000\mathbf{t} + 20 \sin 20000\mathbf{t}$ volts,
$I = 1.2 \sin (5000\mathbf{t} + 63.4^0) + 10.6 \sin (10000\mathbf{t} + 45^0) + 8.97 \sin (20000\mathbf{t} + 26.6^0)$ amperes.
Determine the network elements and power supplied to the network.

3. Using Laplace transform method, find v(t) in the network shown in the figure below for $\mathbf{t > 0}$.

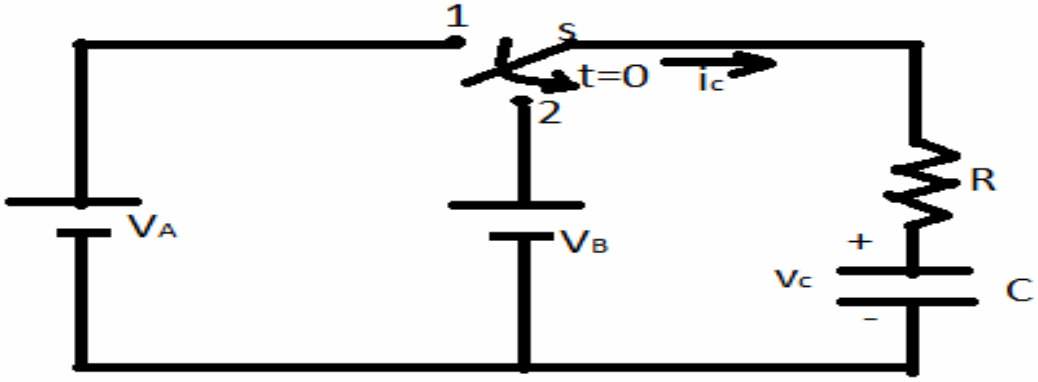


4. a) Discuss in detail about ABCD and hybrid parameters of two-port networks.

b) Find the hybrid parameters of the two-port network shown in figure below:

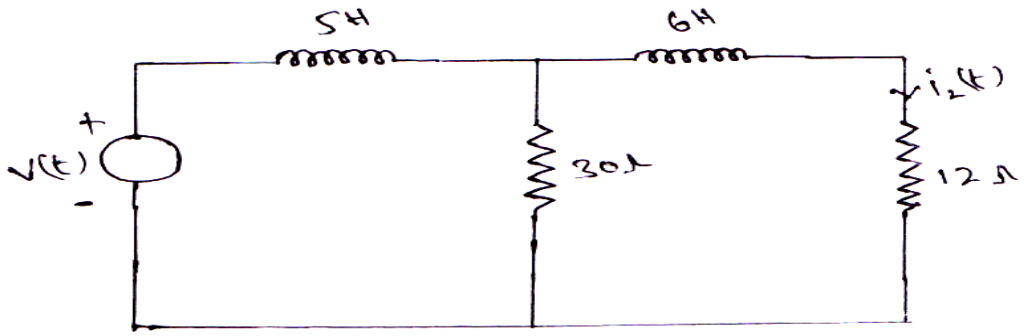


5. a) Describe the response of RL networks to pulse excitation.
   b) The switch S in the circuit of fig has been in position 1 for a long time compared to RC. At t=0, it is moved to position 2. Determine $V_C(t)$ and $I_C(t)$ for $t \geq 0$.



6. Explain in detail about RL transients for applying AC input.

7. For the circuit shown figure, find the transfer function $H(s) = \frac{i_2(s)}{V(s)}$



8. a) Write the testing procedure of real functions.
   b) Write the basic operations in synthesis.

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CODE No.:10BT40202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

ELECTRO MAGNETIC FIELDS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and explain about Gauss law in point form.
b) Two identical line charges lie along *x* and *y* axis with charge density $\ell_l = 30\mu c/m$. Obtain $\overline{D}$ at (3,3,3).

2. a) Explain electric dipole and dipole movement.
b) The potential difference between two concentric sphere of radii x_1 and $x_2(x_2 > x_1)$. Show that electric field E at the surface of inner sphere is minimum of $2V/x_1$ for $x_1 = x_2/2$.

3. a) Derive the expression for the potential gradient and explain the concept of potential gradient.
b) What happens when a solid conductor is placed in an electric field? Derive the boundary relations at the boundary between a conductor and dielectric.

4. a) State and explain Biot-Savarts Law.
b) A surface current of current density $\overline{K} = 30\overline{a}_x \; A/m$ flows in the y = 0 plane throughout the region -5 < z < 5m, - ∞ < x < ∞. Find $\overline{H}$ at point p(0, 15, 0) in free space.

5. a) State Amperes 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. a) Define the terms magnetic force and torque and explain the relationship between them.
b) Explain about the conditions that a magnetic field should satisfy at the boundary of two magnetic materials.

7. Evaluate both sides of Stokes Theorem for the field $H = 6xya_x - 3y^2a_y$ A/m and rectangular path around the region $2 \le x \le 6$, $-1 \le y \le 3$, z=0, the positive direction of d_s be a_z.

8. Write the Maxwell's equations in good conductors for time varying fields and static fields both in differential and integral form.

CODE No.:10BT40203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

GENERATION OF ELECTRICAL POWER

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the different energy sources and efficiency in their use.
b) Explain the growth of power system in India.

2. What are the types of hydro power plants? Give their relative merits and demerits.

3. a) Explain the function of chimney and precipitator.
b) Discuss the need of cooling towers and list out various types of cooling towers.

4. By means of a neat sketch explain the principle of operation of a pressurized water reactor.

5. a) Explain about the connection schemes of distribution systems.
b) A DC 3 wire system with 500V between outers has lighting loads of 150 kW on the positive side and 100 kW on the negative side. The loss in each balancer machine is 3kW. Calculate ;
(i) total load on the main generator,
(ii) kW loading of each balancer machine.

6. Explain about various ways of classifying substations.

7. a) Draw the load curve and explain its importance.
b) A power station has a maximum demand of 15 MW. The annual load factor is 50% and plant capacity factor is 40%. Determine the reserve capacity of the plant.

8. Explain the causes of low power factor and their effect on the power system by giving suitable examples.

CODE No.:10BT40204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

ELECTRICAL MEASUREMENTS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain deflecting system, controlling system and damping system with reference to an electrical indicating instrument.
b) Explain different errors and their compensation in measuring instruments.

2. a) Explain the working of a repulsion type moving iron instrument.
b) Derive the expressions for ratio and phase angle errors in a Potential transformer.

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 induction type 3-phase energy meter.
b) Write a short note on trivector meter.

5. a) With neat diagram explain about polar potentiometer
b) The following results were obtained for the determination of impedance of a coil by using a coordinate type potentiometer:
Voltage across **1.0Ω** resistor in series with coil is **+0.2404V** in phase dial and **0.0935v** on quadrature dial.
Voltage across **10:1** potential divider used with the coil is **+0.3409V** on in phase dial and **+0.2323V** on quadrature dial.
Calculate the resistance and reactance of the coil.

6. a) Explain the working of Wheatstone bridge and derive the expression for sensitivity of Wheatstone bridge.
b) Explain any method for finding unknown resistance of very high resistance.

7. a) Explain about the measurement of Capacitance using Schering bridge
b) Determine the equivalent parallel resistance and capacitance that causes a Wein bridge to null with the following component values:
R_1=2.8kΩ; R_2=20kΩ; C_1=4.8μF; R_4=80kΩ; f=2KHZ.

8. a) Describe the constructional details and working of a single phase electrodynamometer type of power factor meter. Prove that the special displacement of moving system is equal to the phase angle of the system.
b) Explain with diagrams, the bounded and unbounded types of strain gauges.

CODE No.:10BT40205

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

TRANSFORMERS AND INDUCTION MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the working of a transformer at no load and load conditions.
b) State the various losses takes place in a transformer. What factors do they depend. Explain the steps taken to minimize these losses.

2. a) Define the efficiency of a transformer. What are the various losses present in transformer?
b) Derive the condition for maximum efficiency.

3. a) Explain the procedure to conduct open-circuit test on a single phase transformer.
b) Draw the connection diagrams of step-down and step-up auto transformers.

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. Discuss the torque slip characteristics of the motor.
b) A 3-phase induction motor is wound for 4 poles and is supplied from 50 Hz system. Calculate:
i) the synchronous speed
ii) the rotor speed when slip is 4% and
iii) the rotor frequency when the rotor runs at 600 rpm.

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 Blocked rotor test on a 3-phase induction motor with a neat circuit diagram
b) In a no-load test on a 3-phase induction motor took 10A and 450 watts with a line voltage of 110 V. If the stator resistance per phase is 0.05 Ω and friction and windage losses amount to 135 watts, calculate the exciting conductance and susceptance per phase.

8. What are the various methods of speed control of 3-phase induction motor? Explain any two methods in detail with neat diagrams.

CODE No.:10BT40221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

PRINCIPLES OF ELECTRICAL ENGINEERING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Determine the Z-parameters of the network shown in fig. 1.

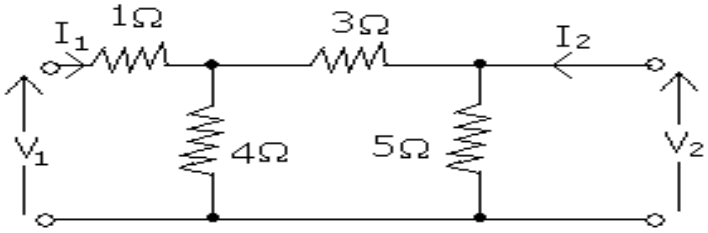

Fig.1

b) Z-parameters of 2, two port networks connected in series is given as the sum of the corresponding parameters of the individual two port network. Elucidate.

2. Design a K - type low pass filter (both ∏ and T sections) having a cut - off frequency of 2 K Hz to operate with a terminated load resistance of 500 **Ω**.

3. Explain the lattice attenuator and also design a lattice attenuator to have a characteristic impedance of 800 **Ω** and attenuation of 20 dB.

4. a) Explain in detail about Swinburne's test and also list the advantages and disadvantages.
b) An 8-pole **d.c.** shunt generator with 778 wave connected armature conductors and running at 500 r.p.m supplies load of 12**.**5 **Ω** resistance at terminal voltage of 50 V. The armature resistance is 0**.**24 **Ω** and the field resistance is 250 **Ω**. Find the armature current, induced e.m.f. and the flux per pole.

5. With neat sketches, explain the measurement of power in three phase systems using two watt meter method and also show that $\tan\theta = (w_2-w_1)/(w_2+w_1)$.

6. Discuss the importance of **O.C.** and **S.C.** tests on a transformer and also explain the procedure for open circuit and short circuit tests with neat circuit diagrams.

7. a) Explain the principle of operation of an Alternator.
b) With neat diagram, explain the construction of Squirrel cage Induction Motor.

8. Write short notes on the following:
i) AC Servo motors ii) Shaded pole motor iii) Synchros

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CODE No.:10BT40301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

KINEMATICS OF MACHINERY

[Mechanical Engineering]

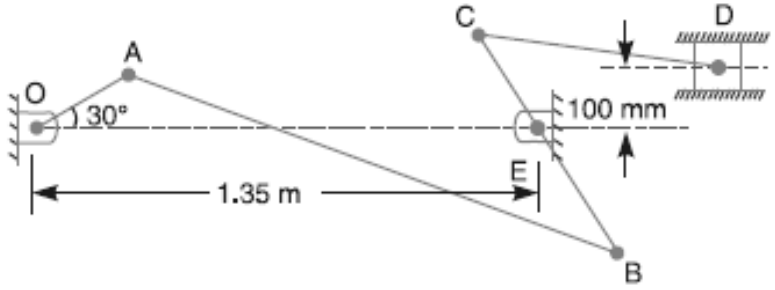
Time: 3 hours **Max. Marks: 70**

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) Sketch Hart and Scott Russul straight line motion mechanisms. Explain their working principle.
b) Derive an expression for the ratio of shaft velocities for hooks joint and draw the polar diagram depicting the salient features of driven shaft speed.

3. A mechanism, as shown in the figure below has the following dimensions: OA = 200 mm; AB = 1.5 m; BC = 600 mm; CD = 500 mm and BE = 400 mm. Locate all the instantaneous centres. If crank OA rotates uniformly at 120 r.p.m. clockwise,
find i) the velocity of B, C and D.
ii) the angular velocity of the links AB, BC and CD.



4. a) What are different types of steering mechanisms? Describe the working of Devis steering gear with neat sketch.
b) Two shafts are connected by a Hooke's joint. The driving shaft revolves uniformly at 500 rpm. If the total permissible variation in speed of driven shaft is not to exceed ±6% of the mean speed, find the greatest permissible angle between the centre lines of the shafts.

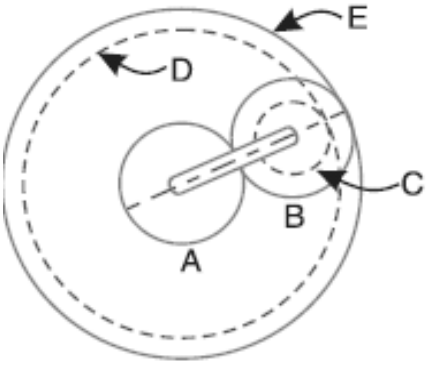
5. a) Construct the displacement curve and deduce expressions for the velocity and acceleration of the follower when it moves with SHM.
b) Derive the relations for velocity and acceleration for a convex cam with a roller follower.

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 rpm drives another shaft at 300 rpm and transmits 6 kW through a belt. The belt is 100 mm wide and 10 mm thick. The distance between the shaft is 4 m. The smaller pulley is 0.5 m in diameter. Calculate the stress in the belt if it is an i) cross belt drive ii) open belt drive, Take coefficient of friction is 0.3.

8. a) What are the various types of the torques in an epicyclic gear train?

b) The figure shows an epicyclic gear train. Pinion A has 15 teeth and is rigidly fixed to the motor shaft. The wheel B has 20 teeth and gears with A and also with the annular fixed wheel E. Pinion C has 15 teeth and is integral with B (B, C being a compound gear wheel). Gear C meshes with annular wheel D, which is keyed to the machine shaft. The arm rotates about the same shaft on which A is fixed and carries the compound wheel B, C. If the motor runs at 1000 r.p.m., find the speed of the machine shaft. Find the torque exerted on the machine shaft, if the motor develops a torque of 100 N-m.



CODE No.:10BT40302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

THERMAL ENGINEERING - I

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Obtain the expression for mean effective pressure of an Otto cycle.
b) An engine working on a dual combustion cycle has a pressure of 1.01325 bar and 50°C before compression. The air is then compressed isentropically to 1/15 of its original volume. The maximum pressure is twice the pressure at the end of isentropic compression and cut off ratio is 2. Determine the temperature at the end of each process and the ideal efficiency of the cycle, $\gamma = 1.4$.

2. a) Discuss the effect of dissociation on engine temperature and power with neat sketches.
b) A petrol engine with a compression ratio of 7 used a mixture of iso-octane and hexane as fuel. The pressure and temperature at the beginning of the compression process is 1 bar and 55°C respectively. If the fuel-air mixture is 20% rich and the maximum pressure developed is 115 bar then evaluate the composition of the mixture in percentage weight. Take $C_v = 0.717$ kJ/kg K, $CV_{hexame} = 43$ MJ/kg, $CV_{iso\text{-}octane} = 42$ MJ/kg and $pV^{1.31}$ is constant for the expansion and compression processes.

3. a) Explain the working of a forced circulation cooling system in a IC engine with a neat sketch.
b) List out types of engine lubrication systems. Explain the working principle of any one of them in detail.

4. a) What are the essential differences between combustion phenomenon in C.I and S.I engines.
b) What is delay period in C.I engine combustion phenomenon?

5. a) Draw and explain the effect of swirl ratio on brake mean effective pressure and specific fuel consumption in Diesel engine.
b) What is the significance of swirl combustion chamber and explain any one category with a neat sketch?

6. a) Describe with neat sketch of working an axial flow compressor.
b) What are the various losses occurring in a centrifugal compressor? Show Euler head and losses in head capacity plot.

7. An eight-stage, axial flow compressor takes in air at a temperature of 20^0C at the rate of 3kg/s. The pressure ratio is 6 and the isentropic efficiency is 0.89. The compression process is adiabatic. The stages of the compressor are similar and operate with 50 percent reaction. In each stage the mean blade speed is 180m/s and the uniform axial velocity of flow of the air is 105m/s. Determine the power to the air and direction of the air at entry to and exit from the rotor and stator blades. Assume air to be perfect gas.

8. a) Differentiate between reciprocating compressors and centrifugal compressors.
b) Draw a neat sketch of a two lobe compressor and explain its construction and working.

CODE No.:10BT40303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

MANUFACTURING TECHNOLOGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are various requirements and functions of the gating system?
b) What are different types of gates? Explain them briefly.

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) Describe the applications and properties of neutral, reducing and oxidizing flame in oxy-acetylene gas welding.
b) Write a short note on weld joint design.

4. a) Explain friction welding technique. What are the applications of this process?
b) What are the various welding defects? Discuss the causes for these defects.

5. a) Compare the properties of cold worked and hot worked parts.
b) Explain possible defects in rolling and suggest suitable remedies.

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) Explain the effect of speed of deformation and friction on extrusion pressure.
b) Describe extrusion process with neat sketch.

8. What are the advantages of conventional machining processes?

CODE No.:10BT40401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

ELECTRONIC CIRCUIT ANALYSIS

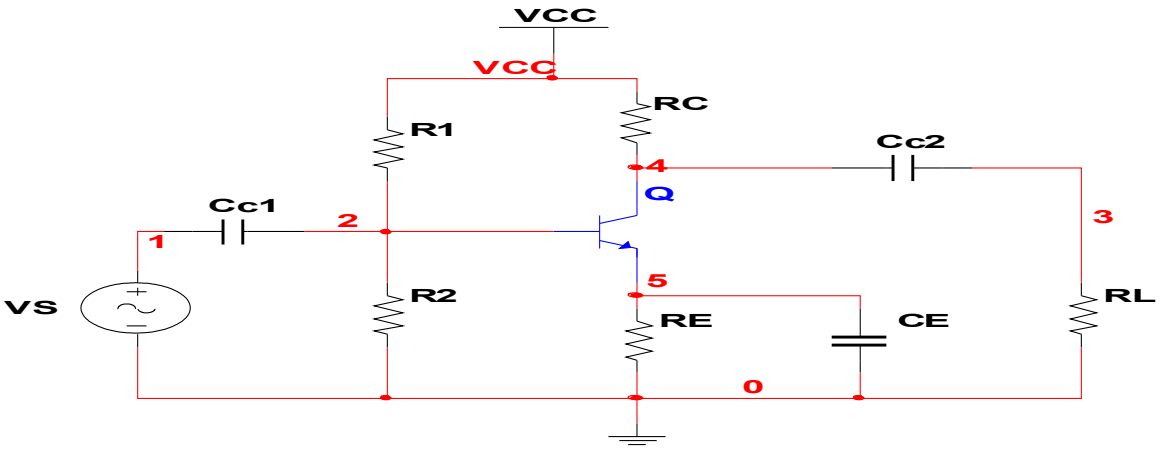
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the effect of coupling and emitter bypass capacitor on the gain of a single stage amplifier.

b) Consider a single stage CE amplifier as shown with $R_S = 2K\Omega$, $R_L = 2K\Omega$, $h_{ie} = 1.1K\Omega$, $h_{fe} = 50$, $h_{oe} = 25\mu A/V$ and $h_{re} = 2.5x10^{-4}$. Find A_I, R_i, A_V, R_o, A_{IS}, A_{VS}.



2. a) Differentiate between Direct and Capacitive coupling of multiple stages of amplifier.

b) Describe the working of a cascade amplifier with neat diagram. What are the merits and demerits of cascade amplifier over a simple common emitter amplifier?

3. Discuss the frequency response of BJT amplifier at low, mid and high frequencies and explain its significance in each region.

4. a) Differentiate between cascaded and folded cascade configurations.

b) Discuss effects of different type of loads to common source MOS amplifier.

5. Draw the Hartley oscillator with BJT, explain its operation and derive an expression for frequency of oscillations.

6. a) Calculate the gain, input impedance and output impedance of voltage series feedback amplifier having gain A = -300, $R_{in} = 1.5$ k-ohms and $R_{out} = 50$ k-ohms, $\beta = 0.05$.

b) Give the performance comparison of various feedback amplifiers.

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) Derive 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.

b) Why stability is required in case of tuned amplifiers? What are various stabilization techniques? Explain any one in detail with neat circuit diagram.

CODE No.:10BT40402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

PULSE AND DIGITAL CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) A 10 Hz square wave is fed to an amplifier. Calculate and plot the output waveform under the following conditions: the lower 3-dB frequency is
i) 0.3 Hz ii) 3.0 Hz iii) 30 Hz
b) Write a brief note on Ringing circuit.

2. a) Explain the operation of negative limiter circuits.
b) What is the basic circuit of a d-c restorer? Explain the operation of this circuit.

3. a) For the transistor switch shown in Figure 1, if V_{CC} = 10V, V_{BB} = -5V, $I_{C(sat)}$ = 5mA and h_{FE} = 50, the input signal changes from 0 to 10 V. Design the transistor switch.

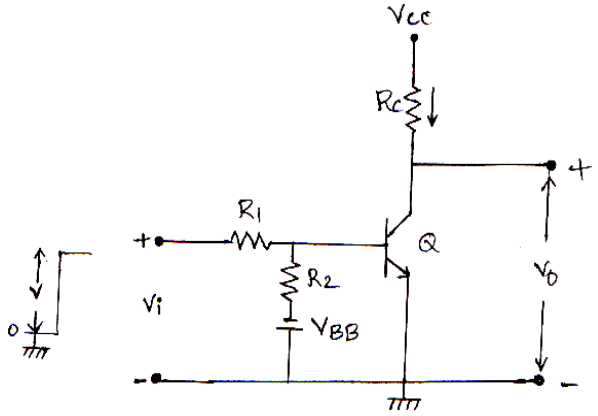


Figure 1.

b) Briefly explain about diode switching times.

4. a) For a collector coupled monostable multivibrator circuit shown in Figure 2, $R_1 = R_2 = R = 20K\Omega$, $C = 0.001\mu F$, $R_C = 2K\Omega$, $V_{CC} = 15V$, $h_{FE} = 20$. In the quasi-stable state Q_1 is in active region with collector current of 4 mA. Find the time period and the value of V_{BB}. Neglect junction voltages.

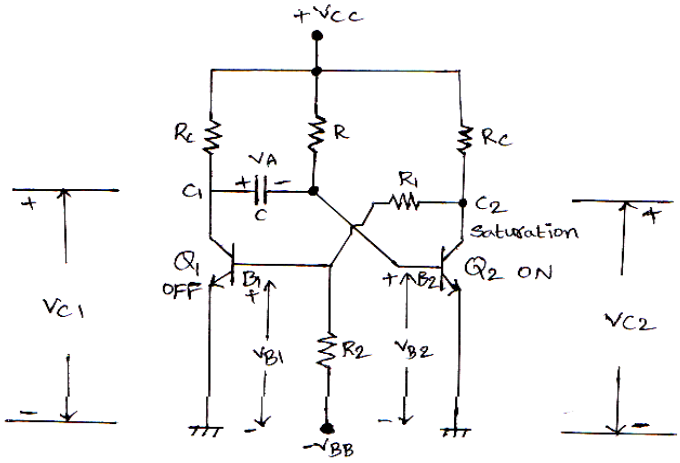


Figure 2.

b) Discuss the basic techniques in the triggering of bistable multivibrator.

5. a) What are the methods of generating a time-base waveform?
b) Explain the methods of linearity improvements.

6. a) Draw the circuit diagram of a bidirectional diode gate and explain its operation. Derive an expression for gain of the gate.
b) Explain the reduction of pedestal in gate circuits.

7. a) Explain the pulse synchronization and frequency division in the sweep circuits with necessary diagrams.
b) Explain the following terms with respect to synchronization.
i) Phase delay and Phase jitter.
ii) Sync signal amplitude and frequency.

8. a) Implement OR and AND gates using diodes for both positive and negative logics.
b) Draw the circuit diagram of direct coupled transistor logic NOR gate for a positive logic and explain its operation.

CODE No.:10BT40403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

ELECTRO MAGNETIC WAVES AND TRANSMISSION LINES

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State the superposition principle of electric fields due to system of discrete charges.
b) Find the energy required to assemble a uniform sphere of charge of radius 'b' and volume charge density 'ρ', in terms of energy density.

2. a) Find the capacitance of a coaxial capacitor of length L, where the radii of inner and outer conductors are '*a*' and '*b*' respectively.
b) Derive an expression for the capacitance of a parallel plate capacitors containing two dielectrics with the dielectric interface parallel to the conducting plates.

3. a) State Ampere's circuital law.
b) Determine the force and the torque of the loop in the x-y plane with sides b1 and b2 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) Prove that in a uniform plane wave travelling in z-direction, Ez = Hz = 0
b) In free space $D = D_m \sin(\omega t + \beta x) a_x$ show that $B = \frac{-\omega \mu D_m}{\beta} \sin(\omega t + \beta x) a_y$.

6. Briefly explain about the wave incident.
i) Normally on a perfect conductor.
ii) Obliquely to the surface of perfect conductor.

7. Derive the relevant equations of m derived low pass filter and derive m derived T-type low pass filter to work into load of 500 Ω with cut off frequency at 4 KHz and peak attenuation of 4.15 KHz.

8. Write short notes on the following
a) Types of Transmission lines
b) Quarter wave transformer
c) Distortion less Condition in Transmission lines
d) Reflection coefficient and VSWR in transmission lines.

CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

SWITCHING THEORY AND LOGIC DESIGN

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Perform the following using BCD arithmetic.
i) $5129_{10} + 5711_{10}$ ii) $3124_{10} + 3127_{10}$
b) Write Excess-3 code for decimal 0 to 9.
c) What is hamming code?

2. State and prove the following Boolean laws;
a) Cumulative
b) Associative
c) Distributive

3. a) Simplify the following Boolean function and implement it with two-level NAND gate circuits.
F = AB'+ABD+ABD'+A'C'D'+A'BC'
b) Implement the Boolean function with NAND gates
F (x, y, z) = ∑ (1, 2, 3, 4, 5, 7)

4. a) Implement full adder using decoder and OR gates.
b) Implement the following Boolean function using 4**:**1 MUX
F(A,B,C,D)=∑m(0,1,2,4,6,9,12,14).

5. List the PAL programming table for the BCD to Excess-3 code converter whose Boolean functions are **Z = D; Y = CD + C'D'; X = B'C+B'D+BC'D'; W = A+BC+BD.**

6. a) What do you mean by triggering modes? Explain with examples.
b) Draw the logic diagram of JK flip-flop and using excitation table. Explain its operation.

7. Explain the following related to sequential circuits with suitable examples.
a) State diagram
b) State table
c) State assignment

8. a) Draw and explain the interaction between control logic and data path.
b) Draw the ASM chart for Weighting Machine.

CODE No.:10BT40421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Give the expressions for voltage gain, input impedance and output impedance of common collector amplifier. Compare these expressions with that of CB amplifier.

b) An emitter follower circuit has input resistance R_i = 500kΩ, h_{fe} = *50,* h_{ie}= *1k*Ω, h_{oe} = $25\mu \frac{A}{V}$.

Find voltage gain and current gain of the amplifier if its output resistance R_0 = 20Ω.

2. a) How does the time constant '**τ**' and rise time 't_r' influence the bandwidth of the amplifier?
b) Explain how source resistance influences the frequency response of the amplifier.

3. a) Explain negative feedback with the help of emitter follower as example.
b) How does negative feedback reduce the distortion in amplifier?
c) The open loop gain of the amplifier is 50 and its band width is 20KHz. When negative feedback is applied, the band width is increased to 25KHz. What will be the required feedback ratio?

4. a) Show that the gain of Wienbridge oscillator using BJT amplifier must be atleast 3 for Oscillators to occur
b) A Quartz crystal has following constants L= 50m H ,C_1=0.02 pf and C_2=12 pf. Find the values of series and parallel resonant frequency, if the external capacitance across the crystal changes from 5 pf to 6 pf. Also find the change in frequency of oscillations.

5. a) What are the advantages and disadvantages of a transformer coupled class - A power amplifier?
b) A loud speaker of 8Ω is connected to the secondary of the output transformer of a class - A amplifier circuit. The quiescent collector current is 140mA. The turns ratio is 3**:**1, collector supply voltage is 10V. If a.c. power delivered to the loud speaker is 0.48W, assuming ideal transformer, calculate ;
i) P_{ac} ii) P_{dc} iii) V_{1rms} iv) V_{2rms} v) I_{1rms} vi) I_{2rms}
vii) % **η** viii) Power dissipated

6. a) Derive the expression for rise time of integrating circuit and prove that it is proportional to time constant and inversely proportional to upper 3 dB frequency.
b) Explain the operation of RC low pass circuit for exponential input is applied.

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) How do you justify that schmitt trigger circuit is a bistable multi vibrator?
b) What is the main limitation of the collector coupled astable multi vibrator to be used as a square wave generator?

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CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

COMPUTER ARCHITECTURE AND ORGANIZATION

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Briefly explain the various functional units of a computer.
b) Assume numbers are represented in 8-bit 2's complement representation. Calculate the following;
i) **6+13** ii) **-6 + 13** iii) **6 - 13** iv) **-6 -13**

2. a) What are the phases of an Instruction Cycle? Draw the flow chart for initial configuration of an Instruction Cycle.
b) Give brief description about the Memory Stack. Convert **6*7+8*9** into postfix and evaluate using Stack.

3. Explain about address sequencing in micro program control.

4. a) What is instruction Pipeline? Explain about 4-segment instruction pipeline.
b) Discuss about Flynn's classification of computers.

5. Explain in detail about modes of transform in I/O.

6. a) Explain, how the CPU communicate with IOP.
b) Explain in detail about the Bit-oriented Protocols.

7. a) What is cache coherence? Explain about snoopy-cache scheme.
b) With a neat diagram, explain Inter-processor arbitration.

8. Explain RISC Architecture.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

OBJECT ORIENTED PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the benefits of Object Oriented Programming?
b) Discuss about friend functions with example.

2. a) Write a generic function to sort **n** elements.
b) What is virtual function? Discuss with an example.

3. a) Discuss about JAVA Arrays with suitable examples.
b) What is meant by overloading? Explain with suitable example.

4. a) What is multiple inheritance? Explain how does Java support multiple inheritance.
b) Illustrate the difference between class and interface.

5. a) What is exception? How to handle exceptions in JAVA?
b) What is package? Explain with suitable example.

6. a) Explain Applet life cycle with a neat diagram.
b) List and explain any five graphics methods with an example program.

7. a) Explain about AWT class hierarchy.
b) Compare all layout managers and show the differences.

8. a) Differentiate AWT and Swing components. Explain JFrame and JApplet components.
b) Discuss JTree and JTable with suitable examples.

CODE No.:10BT40503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

PRINCIPLES OF PROGRAMMING LANGUAGES

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the evaluation criteria for judging the language?
b) List the characteristics that contribute to readability of a programming language. Explain any two.
c) What are the three fundamental features of an object oriented programming language?

2. a) Define an enumeration data type.
b) Define primitive data type. Explain the numeric primitive data type in detail.
c) Define union, free union and discriminated union.

3. a) What is a mixed-mode operation?
b) Define narrowing and widening conversions.
c) How does operand evaluation order interact with functional side effects?

4. a) Explain the scope rules for names.
b) Explain the program design with modules.

5. a) Explain dynamic binding and inheritance in **C++.**
b) What is the difference between private and limited private types in Ada ?
c) Explain the user define abstract data type.

6. a) What is the necessity of Exception handling? Explain with an example how java handles Exceptions.
b) Explain control in PROLOG.

7. a) Explain the data type declaration is done in ML.
b) Explain the features of SQL.

8. a) Explain about procedural abstraction in PERL.
b) Discuss the important features of PHP.

CODE No.:10BT41001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

ELECTRICAL AND ELECTRONIC MEASUREMENTS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain, why Ammeter and Voltmeter are connected in series and parallel respectively.
b) Derive an expression for driving torque of a moving iron ammeter with help of diagram.
c) Two Ammeters, when connected in series, gives the same reading of 25 amperes. The resistance of one meter is 10 ohms and that of the other is 20 ohms. Determine the readings of each meter when they are connected in parallel, current passing through the circuit being 25 amperes.

2. a) Write a detailed note on shunt type ohmmeter.
b) Discuss in detail about Crompton's DC Potentiometer.

3. a) Describe the construction and working principle of Single Phase Electrodynamometer type Power Factor meter with necessary diagrams.
b) Describe the Testing of Energy Meter by Phantom Loading Method. Explain with an example how it is more advantageous than Testing with Direct Loading Method.

4. a) With necessary balancing equations, explain the procedure for measuring unknown inductance using Anderson bridge.
b) Explain about the Schering bridge with the balancing equations.

5. a) Discuss, why are digital instruments becoming popular and mention the merits and demerits of digital instruments over analog instruments.
b) An analog voltage signal whose highest signal frequency is 1 KHz is to be digitally coded with a resolution of 0.01 percent covering a voltage of 0-10V.
Determine i) minimum bits in the digital code ii) analog value of LSB
iii) RMS value of quantization error and iv) minimum sampling rate.

6. Explain the following:
a) Wave analyzer
b) Spectrum analyzer
c) Network analyzer.

7. a) Explain, why CRO is considered to be most versatile instrument in an electronic laboratory. Describe the working principle of a CRO with the help of basic diagram.
b) Explain the principle of electrostatic focusing in a CRO.

8. Describe with the help of suitable diagrams, the basic components of magnetic tape recorder. Give its operating principle, advantages and applications.

CODE No.:10BT41002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

TRANSDUCERS IN INSTRUMENTATION

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) In order to measure the drop in voltage across a resistor, consider two alternative methods:
(i) Use a voltmeter, whose accuracy is about 0.1% of the reading.
(ii) Use an ammeter, whose accuracy is also about 0.1% of the reading and apply Ohm's law.
If the resistor has 0.1% tolerance, which method is more accurate?
b) What is a transducer? Give its classification with an example.
c) Explain how the sensors are classified.

2. a) Define ; (i) Reproducibility (ii) Repeatability (iii) Dead space
(iv) Span (v) Range.
b) Derive the equations for time response of a first order system when subjected to;
i) Unit step input ii) Unit Ramp input
Draw the response curve and find the steady error in each case.

3. a) Explain the construction of wire wound strain gauges and derive the expression for gauge factor.
b) Explain the construction of Semiconductor strain gauges and explain their advantages and disadvantages.

4. a) Explain the working principle of synchros with relevant diagrams.
b) Explain in detail about the construction and working principle of LVDT.

5. a) Explain how by using a differential arrangement a capacitive transducer which works on the principle of variation of capacitance with displacement between two plates, the response can be made linear.
b) Explain how capacitive transducer can be used for measurement of Pressure.

6. a) Discuss the Peltier effect and Thomson effect in a thermocouple.
b) Write briefly about the piezo-electric sensors.

7. a) Explain in detail with neat block diagram of AC and DC signal conditioning systems.
b) Explain carrier amplifier.

8. a) Explain optical absolute encoder using a 3 bit Gray code.
b) Explain in detail about Ultrasonic Transducers.

CODE No.:10BT41201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

DATA COMMUNICATIONS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List and briefly explain the basic functions of the five components of a data communication circuit. Describe data communication circuit configurations.
b) Briefly describe the significance of the Shannon limit for information capacity.
c) Determine the minimum bandwidth, baud and bandwidth efficiency for the following modulation schemes with f_b = 4800 bps.
i) BPSK ii) 8-PSK

2. a) Define transmission line and wave- velocity, cable attenuation, cross talk.
b) Define optical fibre transmission system. What are the advantages and disadvantages of optical -fibre cables?

3. a) Describe pulse code modulation.
b) Describe statistical time division multiplexing.
c) A PCM - TDM system multiplexes 20 voice band channels. Each sample is encoded in to seven bits and a framing bit is added to each frame. The sampling rate is 10,000 samples per second. Determine;
i) Maximum analog input frequency
ii) Line speed in bps.

4. a) Define electromagnetic polarisation, power density and spherical wave front.
b) Describe the different types of radio propagation.

5. a) Explain the function and basic operation of the following telephone set components:

i) ringer circuit ii) equalizer circuit iii) hybrid network iv) dialing circuit.

b) Describe the transmission characteristics of a local subscriber loop.

6. a) What is the difference between a personal communication network and personal communication service?
b) Describe Time Division Multiple Accessing (TDMA).

7. a) Describe the following error correction mechanism.
i) ARQ ii) Hamming codes.
b) Explain the following data communication codes
i) Bar code ii) ASCII code.

8. a) Classify voice-band modems. Explain the characteristics and applications of each type of voice band modems.
b) Explain in detail about digital service unit and channel service unit of data communications equipment.

CODE No.:10BT41221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

COMPUTER GRAPHICS AND MULTI-MEDIA SYSTEMS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail random scan systems.
b) Explain the differences between a general graphics system designed for a programmer and one designed for a specific application.

2. a) Explain the parallel Bresenhams line algorithm with n_p processors.
b) Explain how an ellipse displayed with the midpoint method could be properly filled with a boundary fill algorithm.

3. a) Find the reflection of a triangle with vertices at (4, 10), (6, 12) and (4, 12) about the line y = x+5.
b) Explain 2D Translation and scaling with an example.

4. a) Write Sutherland-Hodgeman polygon clipping algorithm.
b) Derive window to viewpoint coordinate transformation.

5. a) Write the steps involved in viewing pipe-line. Explain briefly about each stage of operation.
b) Write an algorithm for Bezier surface.

6. a) Suggest with reasons five potential applications of multimedia other than the applications in the field of entertainment and education.
b) Explain various multimedia interface standards.

7. Discuss in detail about RAID technology for mass storage for multimedia systems.

8. a) Explain Hypermedia messaging.
b) Briefly explain about distributed multimedia systems.

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

CONTROL SYSTEMS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the effect of feedback on the parameter variation.
b) Draw the closed loop block diagram of DC motor armature speed control.

2. a) Define transfer function. Determine the transfer function of a dc servo motor in field control mode.
b) Draw the block diagram and signal flow graph for the above system.

3. a) A unity negative feedback control system has the plant $G(s) = \dfrac{k}{s(s+\sqrt{2k})}$.

Find the rise time, percentage overshoot, peak time and settling time for a unit step input. For what range of **k** is the settling time less than 1 second?
b) Explain the effect of proportional, integral and derivative control on the closed loop system.

4. a) A system has a characteristic equation $q(s) = s^6 + 19s^5 + 31.25s^4 + 61.25s^3 + 7.75s^2 + 14.75s + 15$. Determine whether the system is stable, using the Routh-Hurwitz criterion. Also determine the roots of the characteristic equation.

b) A feedback system with a loop transfer function is described by $G(s) = \dfrac{6k}{(s+1)(5s+6)}$.

Find the breakaway point on the real axis. Also find the asymptote centroid. Find the value of **k** at the breakaway point.

5. Construct Bode Plot and comment upon stability if $G(s).H(s) = \dfrac{2000}{s(s+1)(s+100)}$.

6. Explain briefly the Nyquist stability criterion with an example.

7. a) Classify the compensators basing on operating frequency.
b) Explain how a lead compensator can be obtained using Bode plots.

8. a) Determine the transfer matrix for the system.

$$\begin{bmatrix}\dot{X}_1\\ \dot{X}_2\end{bmatrix} = \begin{bmatrix}-3 & 1\\ -2 & 0\end{bmatrix}\begin{bmatrix}X_1\\ X_2\end{bmatrix} + \begin{bmatrix}4 & 6\\ -5 & 0\end{bmatrix}\begin{bmatrix}U_1\\ U_2\end{bmatrix}; \qquad \begin{bmatrix}Y_1\\ Y_2\end{bmatrix} = \begin{bmatrix}1 & -1\\ 8 & 1\end{bmatrix}\begin{bmatrix}X_1\\ X_2\end{bmatrix}$$

b) Obtain the state model of the electrical network shown in Fig. (d).

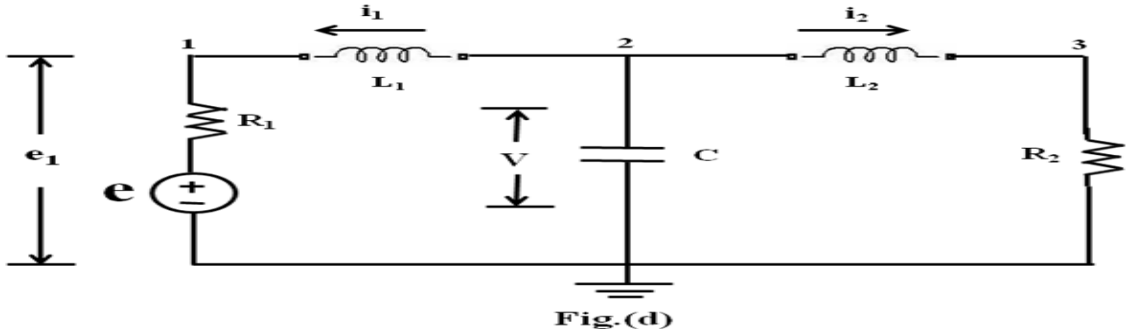


Fig.(d)

❀ ❀ ❀

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Systems Engineering]

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

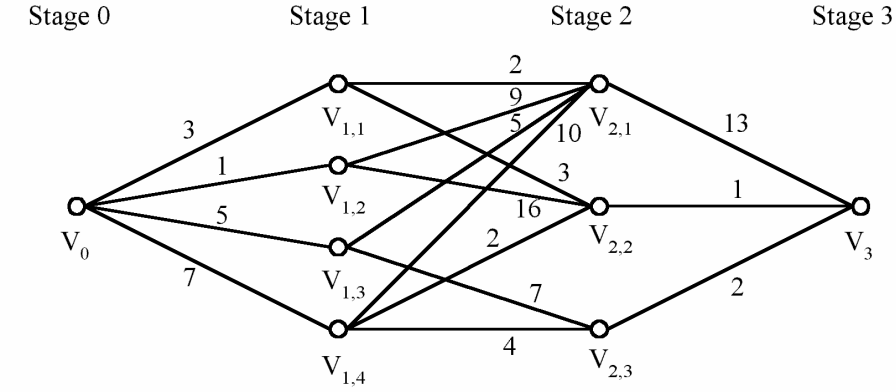
Answer any FIVE questions
All questions carry equal marks

1. a) What are the differences between Big-O notation and Little-o notation? Explain with suitable examples.

b) Derive the time complexity of the below pseudocode:

```
temp=1
repeat
        for i=1 to n
        temp = temp + 1;
        n = n/2;
until n <= 1
```

2. Find the shortest path from V_0 to V_3 of the following graph, using greedy method. What is the optimal solution? Does greedy method gives here the optimal solution.



3. a) Explain the general method of Divide and Conquer.

b) Explain merge sort algorithm using Divide and Conquer.

4. a) Write Greedy algorithm to generate Shortest Path.

b) Define merging and purging rules of 0/1 Knapsack problem.

5. a) Explain about Cook's theorem.

b) Explain the strategy to prove that a problem is NP hard.

6. Using Backtracking approach, write the algorithm to solve ***n***-queen problem.

7. a) Write an algorithm to solve the Knapsack problem with the Branch-and-Bound.

b) Differentiate between Dynamic Knapsack and Branch-and-Bound Knapsack problem.

8. Write notes on the following:

a) Non-deterministic algorithms

b) NP-Hard Scheduling algorithms

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

MICRO-PROCESSOR AND INTERFACING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With a neat diagram explain the architecture of 8086 microprocessor along with function of each block and register.
b) What is an assembler directive? Explain the following assembler directive with example: i) PUBLIC ii) PROC iii) MACRO.

2. a) Write an assembly program sequence for performing binary division on an n-word number by a one-word number.
b) Discuss various branch instructions of 8086 microprocessor, that are useful for relocation.

3. a) With a neat sketch explain 8237 DMA controller and its operation.
b) Design a decoding logic circuit to interface two 16k **x** 8 SRAM chips to 8086 starting at address 40000H.

4. a) Explain the modes of operation of ports of 8255 Programmable Peripheral Interface.
b) Discuss the Control Word formats of 8255 Programmable Peripheral Interface.

5. a) What is an interrupt? Explain, how the 8086 processor recognizes the interrupt. Draw the timing diagram, assuming that INTR is active.
b) Draw and explain the architecture of 8259 programmable Interrupt Controller.

6. a) Explain about line driver and line receiver used in serial communication.
b) Give the status register of 8251 and explain each bit.

7. a) List all the additional features that the 80386 microprocessor has over 8086.
b) Explain the architecture of RISC processor.

8. a) Explain modes of operation of timers of 8051 microcontroller.
b) Discuss various addressing modes of 8051 microcontroller.

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

OPERATING SYSTEMS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain different services of an operating system.
b) Discuss about time sharing and multiprocessor systems.

2. a) What is a process? Explain about process control block.
b) Explain different types of schedulers.

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. a) Explain about Banker's algorithm.
b) Explain the necessary conditions for deadlock prevention.

5. a) Write about partitioned memory allocation.
b) What is virtual memory? Write about demand paging.

6. a) Explain various file access methods in detail.
b) Explain in detail the free space management with neat diagram.

7. a) How stable storage is implemented.
b) What are the services provided by the kernel I/O sub system.

8. Discuss the following:
a) Protection b) Security Problems.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

THEORY OF COMPUTATION

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the transition diagram for a NFA which accepts all strings with either two consecutive 0's or two consecutive 1's.
b) Design a finite automaton to test a string to determine whether the string 1101 occurs as a substring.
c) Construct DFA accepting the set of all strings with utmost one pair of consecutive 0's and utmost one pair of consecutive 1's.

2. a) Describe, in the English language, the sets represented by the following regular expressions:
i) **a(a+b)*ab**
ii) **a*b + b*a**
b) Construct a regular expression corresponding to the transition table given below.

	0	1
q1 *	q1	q2
q2	q3	q2
q3	q1	q2

3. a) Identify whether the language **L = { 0^n1^n| n ≥ 1}** is regular or not and explain your answer .
b) Prove that if L is Regular language, so is LR.

4. a) Explain parsing and PDA.
Construct a DPDA accepting L(G) and a leftmost derivation of **abbab**
b) Explain ambiguous grammars and parse trees with given two examples.
c) Prove that the class of regular sets is closed under Boolean operations.

5. a) What is generating variable? Give example.
b) Reduce the following Context Free Grammar

S→ aAa
A→sb / bCC / DaA
C→abb / DD
E→aC
D→aDA

6. a) Convert the following Context Free Grammar to Push Down Automata
S→0A
A→0ABC | 1B | 0
B→1
C→ 2
b) Verify whether the string 001112 is accepted by equivalent Push Down Automata.

7. a) Explain recursively enumerable languages and prove it. If $\mathbf{L_1}$ and $\mathbf{L_2}$ are recursively enumerable languages over $\mathbf{\Sigma}$, then $\mathbf{L_1 \cup L_2}$ and $\mathbf{L_1 \cap L_2}$ are also recursively enumerable.

b) Consider the unrestricted grammar with productions

S→aBs/ Λ
aB→Ba
Ba→aB
B→b

c) Find unrestricted grammars to generate each of the following languages.

i) **$\{a^n b^n a^n b^n / n>=0\}$**

ii) **$\{a^n x b^n / n>=0, x \in \{a,b\}^*, |x|=n\}$**

iii) **$\{sss / s \in \{a,b\}^*\}$**

8. Explain the following :

a) Recursively enumerable
b) Counter machine.
c) LBA
d) Multi-stack machine

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

PROBABILITY AND STATISTICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Let A and B any two events of the sample space S. Then show that,
i) **P(A/B)≥0**
ii) **P(S/B)=1** and
iii) $P\left(\bigcup_n \frac{A_n}{B}\right) = \sum_n P\left(\frac{A_n}{B}\right)$
where **P(B) > 0**.

b) A problem in Statistics is given to three students A, B and C whose chances of solving it are $\frac{1}{2}, \frac{3}{4}$ and $\frac{1}{4}$ respectively. What is the probability that the problem will be solved?

2. a) It has been found that 2% of the tools produced by a certain machine are defective. Find the probability that in a sample of 4 chosen at random:
i) none is defective
ii) one is defective
iii) P($1 < x < 3$)

b) The mean weight of 500 male students at a certain college is 151 lb and the standard deviation is 15 lb. Assuming the weights are normally distributed, find how many students weigh between 120 and 155 lb.

3. a) Calculate the simple correlation coefficient between mid semester (X) and final exam Scores(Y) of 10 students.

X	31	23	41	32	29	33	28	31	31	33
Y	31	29	34	35	25	35	33	42	31	34

b) For the above data in (a)
i) Fit a regression equation of Y on X.
ii) Estimate the final score of a student who scored 25 in mid semester exam.

4. a) What is meant by sampling? What are the reasons of sampling?

b) Suppose we have a population of size 5, consisting of: 6, 8, 10, 12 and 14 taking random samples of size 2 without replacement. Find the mean and variance of the population, construct the sampling distribution of the sample mean and also find its mean and variance.

5. 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 favor of the proposal. Test the hypothesis that proportions of men and women in favor of the proposal are same at 5%level.

b) To test the claim that the men are taller than women, a survey was conducted resulting in the following data:

Gender	**Size**	**Mean**	**S.D**
Men	1600	172	6.3
Women	6400	170	6.4

Is the claim tenable at 0.01 level of significance?

6. a) It is claimed that a vacuum cleaner uses an average of 46 kilowatt hours per year. If a random sample of 12 homes included in a planned study indicates that vacuum cleaners use an average of 42 kilowatt hours per year with a standard deviation of 11.9 kilowatt hours. Does this suggest at the 0.05 level of significance that vacuum cleaners use on average less than 46 kilowatt hours annually? Assume the population of kilowatt hours to be normal.

b) Random samples of 200 men, all retired were classified according to education and number of children is as shown below. Using chi-square test the hypothesis that the size of the family is independent of the level of education attained by fathers. (Use 5% level of significance)

Education level	***Number of children***		
	0-1	*2-3*	*Over 3*
Elementary	14	37	32
Secondary and above	31	59	27

7. a) Explain what are chance causes and assignable causes of variation in the quality of manufactured product.

b) Derive $\overline{X}$ and R charts and explain them in detail.

8. a) A bank plans to open a single server drive-in banking facility at a certain centre. It is estimated that 20 customers will arrive each hour on average. If on average, it requires 2 minutes to process a customer's transaction, determine;

i) The operation of time that the system will be idle.
ii) On the average, how long a customer will have to wait before reaching the server.
iii) The fraction of customers who will have to wait.

b) A duplicating machine maintained for office use is operated by an office assistant who earns Rs. 5 per hour. The time to complete each job varies according to an exponential distribution with mean 6 min. Assume a Poisson input with an average age arrival rate of 5 jobs per hour. If an 8 h/day is used as a base, determine;

i) the percentage idle time of the machine.
ii) the average time a job is in the system.
iii) the average earning per day of the assistant.

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

ENVIRONMENTAL SCIENCES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define and explain the concept of the term "Environment".
b) Explain briefly the importance of Environmental studies and need to public awareness.

2. a) Discuss renewable and non renewable energy resources.
b) Write a note on water logging.

3. a) Explain the concept of "food chain" and "food wed".
b) Explain functioning of pond ecosystem.

4. a) What is the importance of protecting biodiversity of the earth? Explain.
b) What are the major causes of man-wild life conflicts? Discuss the remedial steps.

5. a) Enumerate major air pollutants and explain their effects on human beings.
b) Describe various sources of marine pollution. How can you prevent pollution of our oceans?

6. a) Write the various sources of water pollution and its control measures.
b) Write an essay about the effects of Thermal pollution.

7. a) How far the Water Act effectively controls the water pollution in India?
b) What are the powers and functions of pollution control Boards?

8. Explain the following:
i) AIDS
ii) Prepare a field report of the onsite of a Marine ecosystem.

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

OPTIMIZATION TECHNIQUES

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain in detail about the classification of optimization problems.

2. a) Find the maximum of the function $f(x) = 2x_1 + x_2 + 10$ subject to $g(x) = x_1 + 2x_2^2 = 3$ using the Lagrange multipliers method.
b) Find the minimum of the function $f(x) = 10x^6 - 48^5 + 15x^4 + 200x^3 - 120x^2 - 480x + 100$.

3. a) Solve the following system of equations using pivot operations:
$4x_1 - 7x_2 + 2x_3 = -8,\ \ 3x_1 + 4x_2 - 5x_3 = -8,\ \ 5x_1 + x_2 - 8x_3 = -34$
b) Define the infeasibility form.

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) What are the various search methods?
b) Find the minimum of the function $\mathbf{f} = \lambda^5 - 5\lambda^3 - 20\lambda + 5$ by Fibanacci search in the internal (0, 5). Take total number of experiments as 8.

6. a) Perform four iterations of Powell's method to minimize the function:
$f(x_1, x_2) = 100(x_2 - x_1^2)^2 + (1 - x_1)^2$ from the starting point $\begin{Bmatrix} -1.2 \\ 1.0 \end{Bmatrix}$.
b) What is the univariate method?

7. a) What are the characteristics of constrained nonlinear programming problem?
b) Define the basic approach of penalty function method. What is SUMT.

8. Solve the following LP problem by dynamic programming
Maximize $F = 10x_1 + 8x_2$
Subject to $2x_1 + x_2 \le 25$
$3x_1 + 2x_2 \le 45$
$x_2 \le 10$
$x_1 \ge 0,\ x_2 \ge 0.$
Verify your solution by proving it graphically.

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Define Managerial Economics. Explain the Nature and Scope of Managerial Economics.

2. What is meant by Break Even Point (BEP) ? From the following particulars, calculate the break even point:

Variable Cost per unit	= Rs.12
Selling Cost per unit	= Rs.18
Fixed Cost	= Rs.60,000

3. Discuss the main features of Monopolistic Competition. How can such competition be sustained?

4. Define sole proprietorship. What are its characteristic features?

5. Prepare a Trial Balance from the following account balances:

Capital A/C	3,00,000	Outstanding expenses	70,000
Creditors	1,00,000	Rent	5,000
Debtors	2,00,000	Taxes	3,000
Bills Receivables	1,00,000	Stationery	2,000
Bills Payables	1,00,000	Legal Fee	5,000
Furniture A/C	2,50,000	Auditor Fee	5,000

6. What is meant by a Balance sheet? The following balances are extracted from the books of Mr.Ganesh. Prepare a balance sheet.

Furniture & Fittings	Rs.3,00,000	Capital	Rs.500,000
Buildings	2,00,000	Bills Payable	2,00,000
Premises	1,00,000	Outstanding Expenses	1,00,000
Machinery	5,00,000	Net Profit	2,00,000
Debtors	1,00,000		
Creditors	2,00,000		

7. Explain the significance and various types of capital. From the following particulars calculate Internal Rate of Return (IRR).

Cash Outlay	Rs.4,00,000
Cash Inflows- 1st year	10,000
2nd year	25,000
3rd year	15,000
4th year	10,000
5th year	20,000

8. Distinguish between Manual Accounting and Computerized Accounting.

CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is a manometer? How they are classified?
b) Calculate the capillarity effect in mm in a glass tube of 3 mm in diameter when immersed in i) water, ii) mercury. Both the liquids are at 20°C and the value of the surface tension for water and mercury at 20°C in contact with air are respectively 0.0736 N/m and 0.51 N/m.

2. a) Define the equation of continuity. Obtain an expression for continuity equation for a one dimensional flow.
b) Water is flowing through a pipe having diameters 30 cm and 15 cm at the bottom and upper end respectively. The intensity of pressure at the bottom end is 29.43 N/cm^2 and the pressure at the upper end is 14.715 N/cm^2. Determine the difference in datum head if the rate of flow through pipe is 50 lit/s.

3. a) Explain the terms hydraulic gradient and total energy lines. Why are the pipes connected in parallel?
b) An Orifice meter with orifice diameter 15 cm is inserted in a pipe of 30 cm diameter. The pressure difference measured by a mercury oil differential manometer on the two sides of the Orifice meter gives a reading of 50 cm of mercury. Find the rate of flow of oil of specific gravity 0.9 when the coefficient of discharge of the meter is 0.64.

4. a) Show that the efficiency of a free jet striking normally as series of flat plates mounted on the periphery of a wheel never exceeds 50%.
b) A jet of 15 cm in diameter moving at 25 m/s strikes a plate moving at velocity 10m/s in the direction of jet. Find the force and work done when (i) the plate is normal to the jet (ii) the plate is inclined at an angle 30° to the jet.

5. a) Explain a pumped storage plant with a neat sketch.
b) The following data is available for a hydro power plant:
Available head = 150 m, catchment area = 2200 sq.km, annual average rainfall = 150cm, turbine efficiency=84%, generator efficiency=92%, percolation and evaporation losses= 18%.
Determine the following:
i) Power generated
ii) Suggest the type of turbine to be used if runner speed is to be kept below 240 rpm.

6. a) How are the turbines are classified and distinguish between impulse turbines and reaction turbines?
b) A Pelton wheel is having a mean diameter of 0.8 m and is running at 1000 rpm. The net head on the turbine is 400m. If the side clearance angle is 15° and discharge through nozzle is 150 litres/sec, determine;
i) power available at nozzle
ii) hydraulic efficiency.

7. a) What are unit quantities? Define the unit quantities for a turbine. Why are they important?
b) A turbine is to operate under a head of 30 m at 300 rpm. The discharge is $10 m^3/s$. If the efficiency is 90%, determine;
i) specific speed of the machine,
ii) power generated and
iii) type of the turbine.

8. a) Obtain an expression for the work done by impeller of a centrifugal pump on water per second per unit weight of water.
b) A centrifugal pump is to discharge $0.12 m^3/s$ at a speed of 1400 rpm. against a head of 30 m. The diameter and width of the impeller at outlet are 25 cm and 5 cm respectively. If the manometric efficiency is 75%, determine the vane angle at outlet.

CODE No.:10BT40101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

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 250 N/mm² (tensile) and 125 N/mm² (compressive). Determine the resultant stress in magnitude and direction on a plane inclined at 60° to the axis of the major principal stress. Also determine the maximum intensity of shear stress in the material at the point.

2. Derive the expressions for slope at the ends and deflection at the centre of span of a simply supported beam of span 'L' subjected to uniformly distributed load of intensity 'w' over the whole span.

3. A cantilever beam of length 3 m is subjected to a point load of 3 kN at free end. Find the slope and deflection at free end using moment area method. Take moment of inertia of the section as 850 cm^4 and $E = 2 \times 10^5$ N/mm².

4. What are the assumptions made in the Euler's theory? Derive the Euler's critical load formula for long column with both ends fixed.

5. A solid circular shaft is subjected to a bending moment of 69 kNm and a torque of 27 kNm. Design the diameter of the shaft according to:
i) The Maximum Principal Stress Theory
ii) The Maximum Shear Stress Theory and
iii) The Maximum Distortion Energy Theory.
Take Poisson's ratio = 0.28, the stress at elastic limit of the material is 278 MPa and the factor of safety=3.0.

6. a) What is Shear centre? Write a short note on Shear centre.
b) A channel section has flanges of size 10 cm × 2 cm and web of size 2 cm × 14 cm. Determine the shear centre of the channel section.

7. Analyze the fixed beam shown in Fig.1 and draw shear force and bending moment diagrams. Find the distance of the points of contra-flexure from supports.

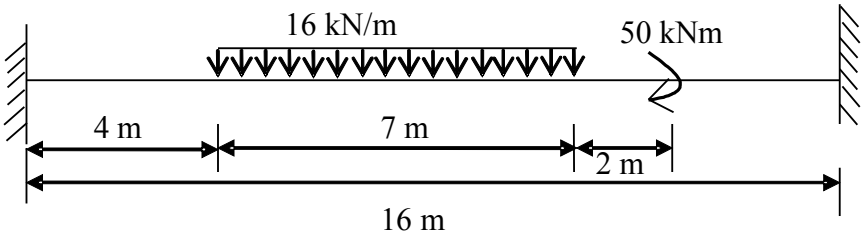


Fig.1

8. A three span continuous beam ABCD is having equal spans of 'l' each. It carries a uniformly distributed load w/unit length over the entire beam. The beam is freely supported on all the supports, which are at the same level. Draw Shear force and Bending moment diagrams for the beam.

CODE No.:10BT40102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

FLUID MECHANICS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss with a neat sketch the phenomenon of separation of boundary layer formed over a curved surface. Also explain the methods of control of boundary layer.
b) A submarine, approximated in shape to be a cylinder of 3.2 m in diameter and 18 m long travels submerged at 2.0 m/s in sea water at 4°C. Find the drag exerted on it. Take ν for sea water at 4°C as 1.65×10^{-2} stokes , C_D as 0.7 and ρ as 1025 kg/m^3. Also comment on the value of friction drag.

2. a) State the conditions for the formation of a hydraulic jump in open channel flow.
b) Establish a relationship between the depths of flow upstream and downstream of hydraulic jump in terms of the upstream Froude number. A sluice gate discharges water into a horizontal rectangular channel with a velocity of 10 m/s and depth of flow of 1 metre. Determine the depth of flow after the jump and consequent loss in total head.

3. a) Prove that the loss of energy head in a hydraulic jump is equal to $\mathbf{(d_2 - d_1)^3 / (4d_1d_2)}$, where $\mathbf{d_1}$ and $\mathbf{d_2}$ are the conjugate depths.
b) What is the essential difference between gradually varied flow and rapidly varied flow? Illustrate with neatly drawn sketches.

4. a) A jet has a direct impact on a plate moving in the direction of the jet. Find the force of impact and the work done by the jet per second on the plate. Can this case occur in practical cases?
b) A jet of water delivers 0.056 cumec with a velocity of a 24 metres/sec and impinges tangentially on a vane moving in the direction of the jet with a velocity of 12 metres per second. The vane is so shaped that if stationary it would deflect the jet through an angle of 45°. 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) Classify turbines based on different criteria. How the classification based on specific speed is practically useful?
b) A 150 mm diameter jet of water strikes the bucket of a Pelton wheel and is deflected through an angle of 165° by the buckets. Head available at the nozzle is 350 m. 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) Define specific speed of a turbine. Show that Pelton wheel is a low specific speed turbine.
b) Discuss the significance of cavitation in turbines.
c) A turbine develops 9 MW when running at 12 rpm. The head on the turbine is 32 m. If the head acting on the turbine is reduced to 24 m, determine the percentage change in the speed and power developed.

7. a) Find the power required to drive a centrifugal pump which delivers 0.08m^3/s of water to a height of 20m through a 1.5cm diameter pipe and 100m long. The overall efficiency of the pump is 70% and coefficient of friction f = 0.15 in the formula $h_f = \frac{4fLV^2}{2gd}$.

b) The diameter of an impeller of a centrifugal pump at inlet and outlet are 30cm and 60cm respectively. Determine the minimum starting of the pump if it works against a head of 30m.

8. a) Classify hydropower plants and discuss its merits with respect to nuclear power plants.

b) Two turbo generators each of capacity 25 MW have been installed at a hydel power station. During a certain period the load on the hydel plant varies from 15 MW to 40 MW. Calculate i) total installed capacity, ii) load factor and iii) plant factor.

CODE No.:10BT40103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

REINFORCED CEMENT CONCRETE STRUCTURES - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) From first principles, derive the expression for 'Moment of Resistance of a balanced section' for a 'singly reinforced beam' as per working stress method.
b) Determine the safe **udl** (uniformly distributed load), a cantilever beam of 2 m can carry in addition to a concentrated load of 4 kN at it's free end. The beam of size 230 mm × 450 mm. It is provided with 4 bars of 16 mm diameter as tension reinforcement. Assume M 20 concrete and Fe 415 grade steel. Use 'working stress method'. Assume moderate exposure condition.

2. a) Explain Characteristic strength, Characteristic loads and partial safety factors.
b) State the assumptions made in limit state method of design.
c) Estimate the stress block parameters in Limit state method.

3. Design and flexural reinforcement for an RC beam of size 300 mm wide and 450 mm deep to resist an ultimate moment of 365 kNm. Assume moderate exposure condition. Use M25 concrete and Fe 500 grade steel. Adopt Limit State method. Assume mild exposure condition. Sketch the reinforcement details.

4. a) Explain in brief the design procedure for shear reinforcement.
b) A reinforced concrete beam has a support section with a width of 250 mm and effective depth of 500 mm. The support section is reinforced with 3 bars of 20 mm diameter on the tension side. 8 mm diameter two legged stirrups are provided at a spacing of 200 mm centers. Using M20 grade concrete and Fe 415 grade steel, estimate the shear strength of the support section.

5. Design the reinforcement of a column, 450 mm × 450 mm, subjected to a factored axial load of 1500 kN and a factored moment of 300 kNm. Use M 20 grade concrete and Fe 415 steel.

6. Design an isolated square footing for a reinforced concrete column 400 mm × 400 mm reinforced with 6 reinforcing bars of 25 mm diameter, subjected to a factored axial load of 1200 kN and a factored uniaxial moment, of 135 kNm at the column base. The safe bearing capacity of the soil is 200 kN/m^2 at a depth of 1.5 m. Assume M30 concrete and Fe415 grade steel. Sketch the reinforcement details.

7. Design a simply supported RCC slab for a room of clear dimensions 3.5 m × 7.2 m subjected to live load of 4 kN/m^2 and floor finish of 1 kN/m^2. Assume the width of supports is 300 mm. Use M 20 concrete and Fe 415 steel.

8. a) Explain the factors influencing the crack-width in RC members.
b) A simply supported rectangular beam of effective span 6.3 m has cross-section 300mm×450 mm effective depth. The beam is reinforced with 6-20 Ø as tension reinforcement and 2-16 Ø as compression reinforcement. The beam is subjected uniformly distributed load of 25 kN/m. Calculate short-term deflection. Use M 20 grade concrete and Fe 415 steel.

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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 - 2014

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 advantages, disadvantages and construction of a cavity wall.
b) Describe the various types of timber partition walls.

2. a) Describe the Single roofs.
b) Explain the advantages and disadvantages of flat roofs. Describe the Madras Terrace roof.

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 importance, objectives and functions of materials management.
b) Write the classification of equipment. Discuss the factors affecting the selection of the equipment.

6. a) Explain the methods of planning and programming problems.
b) Explain the Milestone charts.

7. a) Define an event and an activity. Differentiate between the two.
b) For the network shown in Fig.1, prepare a table showing a list of predecessors, immediate predecessors, successors and immediate successors to each of the events.

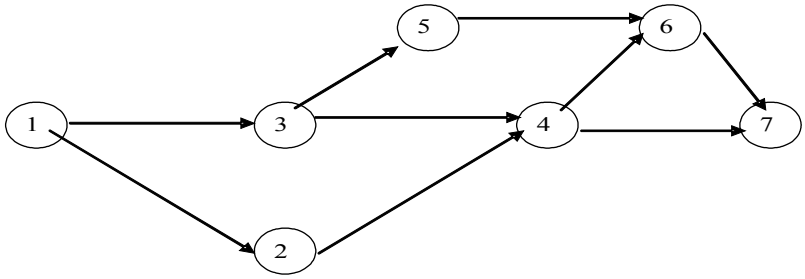


Fig.1

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.:10BT40201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

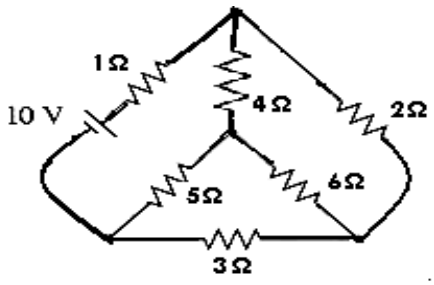
NETWORK ANALYSIS AND SYNTHESIS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

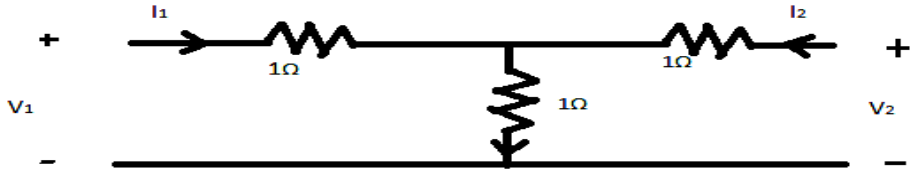
1. a) Explain the terms: Twigs, links and cut-set matrix with an example.
b) Draw the oriented graph and obtain the tie-set matrix (Consider 4Ω, 5Ω and 6Ω branches as twigs).



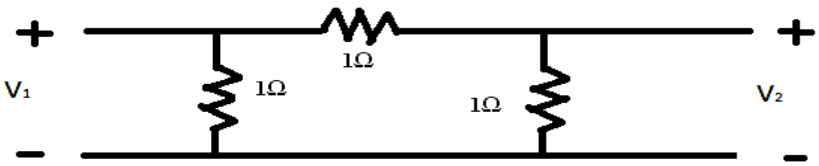
2. a) Explain odd function symmetry.
b) The voltage and current in a circuit are represented as follows:
V = 120 sin (ωτ+30°) - 50 sin (3ωτ+60°) + 30 sin 5ωτ volts
I = 20 sin (ωτ = 30°) + 16 sin (3ωτ + 30°) + 10 cos (5ωτ - 60°) Amps.
Determine the power consumed in the circuit and the overall power factor.

3. a) Define Laplace transform and explain the advantages over classical method.
b) Find initial and final values of the function $F(s) = \dfrac{s^3 + 3s^2 + 3s + 1}{s^2 + 2s + 2}$.

4. a) Find Y parameters for the following network shown below.



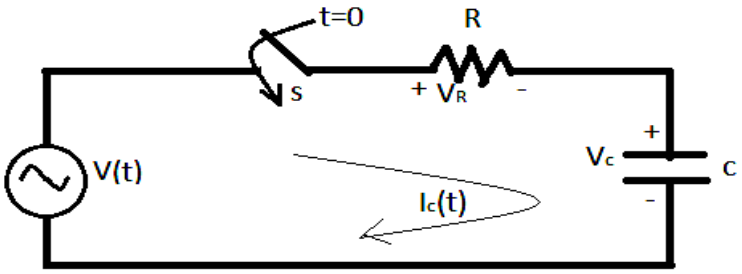
b) Estimate Hybrid (h) parameters for the following network.



5. Explain the solution methodology of calculating the time response of RLC series circuit with step input.

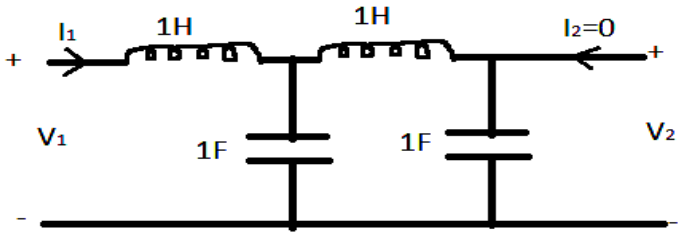
6. a) Derive the response of RL circuit to sinusoidal excitations.

b) Determine the capacitor current $i_c(t)$ for t > 0 in the network shown in the figure when a sinusoidal voltage $\mathbf{V=V_m \sin \omega\tau}$ is applied at t = 0 through a switch S. Use Laplace transformation method.



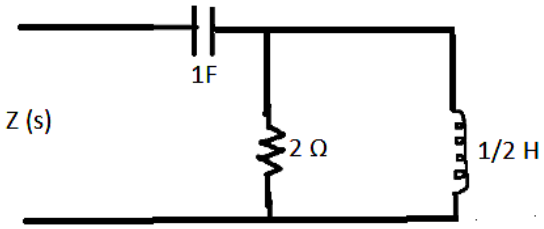
7. a) Explain the conditions for driving point function.

b) Determine driving point impedance of the ladder network shown in figure.



8. a) Explain positive function.

b) For the network shown in figure below find the driving point impedance Z(s). Locate the poles and zeros.



CODE No.:10BT40202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

ELECTRO MAGNETIC FIELDS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and explain Coulomb's law of electrostatic field in vector form.
b) Four concentrated charges **Q1 = 0.3 μ c, Q2 = 0.2 μ c, Q3 = −0.3 μc, Q4 = 0.2 μ** care located at the vertices of a plane rectangle. The length of rectangle is 5 cm and breadth of the rectangle is 2 cm. Find the magnitude and direction of resultant force on **Q1**.

2. a) What is Electric field intensity? Explain the concept of electric field and write down expression for the electric field due to a point charge.
b) Explain about dipole and dipole movement.

3. a) Explain ohms law in point form.
b) Derive the expression for capacitance of a coaxial cable.

4. For a non-magnetic material having $\epsilon_r = 8.5$, $\sigma = \frac{10^{-4} S}{m}$ find the loss tangent, attenuation constant, phase constant, intrinsic impedance for a wave having a frequency of 2.5 MHz. Assume the material to be a good dielectric.

5. a) State and explain Ampere's circuital law.
b) Using Ampere's circuital law, obtain an expression of the magnetic field intensity at any point due to a concentric cylindrical conductor, the inner and outer conductors carrying equal and opposite currents.

6. a) Derive the Lorentz force equation.
b) A straight solid wire segment carrying a current 2 $\overline{U}$ y Amps extends from A (0, 1, 2) to B (0, 4, 2) is free space. This wire is subjected to the magnetic field of an infinite current filament lying along z- axis and carrying 35A is the U_z direction. Find the vector torque on the wire segment about an origin at i) P_A (0, 0, 2) ii) P_B (0, 0, 0).

7. a) Derive the expression for energy stored in a magnetic field.
b) Determine the inductance of coaxial line with solid inner conductor by assuming suitable data.

8. a) Explain the significance of Maxwell's equations.
b) State and explain Poynting theorem.

CODE No.:10BT40203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

GENERATION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Define the terms conventional and non-conventional energy sources. Discuss about future scope of non-conventional energy sources in India.

2. Discuss about different types of hydro electric power stations.

3. a) What are the types of steam turbines?
b) Explain various types of fuels used in thermal power plants.

4. a) Explain with neat sketch the fast breeder reactor. Write its advantages and disadvantages.
b) Explain with neat sketch the schematic arrangement of gas power plant.

5. a) Compare a.c. and d.c. power distribution.
b) Explain Kelvin's law.

6. a) What is a bus bar? Discuss about different schemes of bus bar arrangements.
b) Write short notes on installation of gas insulated substation.

7. a) A generating station has a maximum demand of 500 mw, the annual load factor is 50% and capacity factor is 40%. Find the reserve capacity of the plant.
b) Explain the terms: cost of generation and depreciation.

8. a) Explain the disadvantages of low power factor.
b) A consumer has an average demand of 400 kW at a pf of 0.8 lag and annual load factor of 50%. The tariff is Rs.50/kVA of maximum demand per annuam plus 5 paise/kwhr. If the power factor is improved to 0.95 lag by installing phase advancing equipment, calculate the net annual saving in electricity charges.

CODE No.:10BT40204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

ELECTRICAL MEASUREMENTS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the torque equation for D'Arsonval galvanometer.
b) Design an Aryton shunt to provide an ammeter with the current ranges 1A, 5A and 15A. A basic meter resistance is 50Ω and fullscale deflection current is 1 mA.

2. a) An alternating current voltmeter with a maximum scale reading of 50 V has an inductance of 0.09 H and a total resistance of 500Ω. The coil is wound with copper wire having a resistance of 50Ω and the remainder of the voltmeter circuit consists of a non-inductive resistance in series with the coil. Find the capacitance that should be placed across the non-inductive resistor to make the instrument read correctly both on **dc** and **ac**.
b) Explain the disadvantages of shunts and multipliers when used for extension of range. Explain how instrument transformers are a better substitute for shunts and multipliers for high range.

3. a) Explain in detail about Low power factor electro dynamo meter wattmeter.
b) A 3 Phase, 440V motor load has a power factor of 0.6. Two watt meters connected to measure the power show the input to be 25 KW. Find the reading on each instrument.

4. a) Describe the constructional details of a single phase induction type energy meter.
b) Explain why the phase of shunt flux is made exactly in quadrature with that of applied voltage so as to produce a deflecting torque exactly proportional to power.

5. a) Explain the principle, construction and operation of a DC Crompton's potentiometer.
b) Explain about the calibration of Ammeter and Voltmeter of a DC Crompton Potentiometer.

6. a) What is the importance of the value of earth's resistance? What are the factors which influence its value?
b) Describe the fall of potential method for measurement of earth resistance.

7. a) Describe the working of Hay's bridge for measurement of inductance. Derive the equations for balance and draw the phasor diagram under conditions of balance.
b) A 1000 Hz bridge has the following constants: arm ab, $R_1 = 1000\Omega$ in parallel with $C_1 = 0.5\ \mu F$; arm bc, $R_3 = 1000\Omega$ in series with $C_3 = 0.5\ \mu F$; arm cd, $L_4 = 30$ mH in series with $R_4 = 200\Omega$. find the constants of arm da to balance the bridge. Express the result as a pure resistance R in series with a pure inductance L or capacitance C.

8. a) Explain the principle and working of digital voltmeter.
b) Explain the working of 3-phase moving iron type power factor meter.

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CODE No.:10BT40205

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

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 with neat sketch the construction of single phase core type and shell type transformer.
b) A 25 kVA, single phase transformer has 500 turns on the primary and 50 turns on the secondary winding. The primary is connected to 3000 Volts, 50 Hz supply. Calculate primary and secondary currents on full load, secondary e.m.f. and maximum flux in the core.

2. a) What are equivalent circuits? Obtain the equivalent circuit of single phase transformer "on load" referred to primary winding side.
b) A 100kVA, 2000/200V, 50Hz single phase transformer has an impedance drop of 10**%** and resistance drop of 5**%**. Calculate the;
(i) regulation at full load 0**.**8pf lagging and (ii) value of pf at which regulation is zero.

3. a) Explain why parallel operation of transformers is necessary. State the essential and describe conditions which should be satisfied before two single phase transformers may be operated in parallel.
b) Describe open circuit and short circuit tests on a transformer.

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, applications.

5. a) Describe with neat sketches the constructional details of three phase cage type induction motors.
b) A 4 - pole, 3φ induction motor operates from a supply whose frequency is 50Hz. Calculate:
(i) speed at which magnetic field of stator is rotating, (ii) speed of the rotor when slip is 0.04
(iii) frequency of rotor current when slip is 0.03 and (iv) frequency of rotor current at stand still.

6. a) Derive the relation between rotor input P_2, gross mechanical power P_m and the rotor Copper loss.
b) A 3-phase, 50 Hz, 6-pole induction motor has a slip of 4% when the output is 20kW. The friction and windage losses are 250 watts. Calculate the motor speed and the rotor copper losses.

7. Draw the circle diagram for a 3**.**73 kW, 200V, 50Hz, 4-pole, 3-phase star connected induction motor from the following test data:
No-Load test**:** Line voltage 200V, Line current 5A, total input 350W
Blocked Rotor test**:** Line voltage 100V, Line current 26A, total input 1700W
Estimate from the diagram for full-load condition, the line current, power factor and also the maximum torque in terms of the full-load torque. The rotor Cu loss at standstill is half the total Cu loss.

8. a) Explain the rotor resistance control method of induction motor speed control stating its merits and demerits.
b) What is the effect of stator poles on the speed of induction motors? Explain the method of speed control by changing stator poles.

CODE No.:10BT40221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

PRINCIPLES OF ELECTRICAL ENGINEERING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the parallel connection of two port networks by using interconnection.
b) The impedance parameters of two port network are $\mathbf{Z_{11}=6\ \Omega,\quad Z_{22}=4\ \Omega,\quad Z_{12}=Z_{21}=3\ \Omega.}$ Compute the **Y** parameters and ABCD parameters and write the describing equations.

2. a) Design constant - K Low pass filter.
b) Design m - derived T section for High pass filter.

3. Explain Bridged - T attenuator and also design it with an attenuation of 20 dB and terminated in a load of 500Ω.

4. a) Draw the magnetisation characteristics of a **dc** generator and explain in detail.
b) A 4 pole, 500V **dc** shunt motor has 700 wave connected armature conductors. The full load armature current is 60A and the flux per pole is 30mWb. Calculate the full load speed if the motor armature resistance is 0.2 Ω and brush drop is 1V per brush.

5. a) Explain the relationship between phase and line quantities.
b) A balanced star connected load is supplied from symmetrical three-phase, 400V system. The current in each phase is 30A and lags 30° behind phase voltage. Find
(i) The impedance in each phase, (ii) the total power. Draw the phasor diagram.

6. a) Describe the constructional details of single phase transformer.
b) A 40 KVA, 3300/240V, 50Hz, 1-phase transformer has 660 turns on the primary. Determine the maximum value of flux in the core. And also find the approximate value of primary and secondary full load currents.

7. a) Explain the different types of rotors of an Alternator
b) A 3 Phase 16 pole alternator has a star connected winding with 144 slots and 10 conductors per slot. The flux per pole is 0.003 Wb, sinusoidally distributed and the speed is 375 r.p.m. Find the frequency r.p.m and the phase EMF. Assume full pitched coil.

8. Explain the principle of operation of;
i) Stepper motor
ii) Capacitor motor.

CODE No.:10BT40301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

KINEMATICS OF MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is meant by inversion of a mechanism? Describe with the help of suitable sketches the inversion of four bar mechanism.
b) How is the mechanism of higher pair can be replaced by the mechanism of lower pair?

2. a) What are the approximate straight line motion mechanisms? Explain one of the mechanisms with a neat sketch.
b) What is a pantograph? What are its applications? Explain its mechanism with a neat sketch.

3. In Slider crank Mechanism shown in fig, The crank OA = 300mm and connecting rod AB = 1200mm.The crank OA is turned 30° from IDC, locate all the I.C. if the crank rotates at 15rad/s clockwise ,
find i) velocity of slider
ii) angular velocity of Connecting Rod (AB).

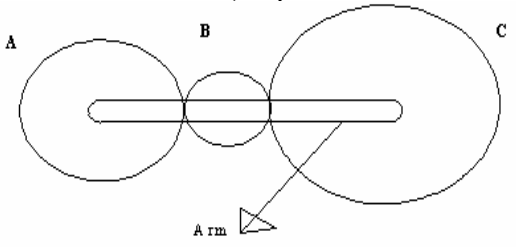
4. a) Explain condition for correct steering with neat sketch.
b) Draw a neat sketch of Davis Steering gear and explain.

5. Draw the profile of a cam to impart the following motion to a flat -faced follower.
i) Follower to move outward through a distance of 50mm during 150°of cam rotation with SHM
ii) Follower to dwell for the next 30°of cam rotation.
iii) Follower to return to its initial position during 150° of cam rotation with uniform equal acceleration and retardation motion.
The line of stroke of the follower passes through the axis of rotation of the cam and the flat face of the follower is at right angles to the axis of the reciprocating follower.

6. a) Define : i) Circular pitch ii) Module
b) A pinion having 30 teeth drives a gear having 80 teeth. The profile of the gears is involute with 20° 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 belt in a cross belt drive.
b) What are different types of chains? Explain, with neat sketches, the power transmission chains.

8. In an epicyclic gear train, shown in figure. The number of teeth on wheels A, B and C are 42, 26 and 56 respectively. If the arm rotates at 600 rpm CW, find ;
i) Speed of wheel C when A is fixed and ii) Speed of wheel A when C is fixed.



CODE No.:10BT40302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

THERMAL ENGINEERING - I

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Prove that the efficiency of Atkinson cycle is a function of compression ratio, pressure ratio and ratio of specific heats. Analyze the influence of these parameters on the efficiency of cycle.
b) For producer gas engine, the gas to be cooled before enters into the engine combustion. Justify.

2. a) Show and discuss about the power loss due to the assumption of variable specific heats compared to constant specific heats in p-V diagram for an Otto cycle.
b) What is meant by adiabatic flame temperature and how to find this temperature for given air fuel ratio of an engine?

3. a) With neat sketch explain the valve timing diagram for a 4-stroke diesel engine.
b) With neat sketch explain the working of splash and pressure lubrication system.

4. a) Explain the phenomenon of knock in SI engines with neat sketches.
b) List the various engine variables that effect of knocking and explain atleast two of them in detail.

5. A 75KW diesel engine consumes 16.8Kg of fuel oil per hour containing 86% of carbon and 14% of hydrogen. Calorific value of oil is 45200kJ/kg. The water supplied to the jackets also passes subsequently through the exhaust calorimeter. The following observations were made:

Quantity of water supplied per hour	= 1220 kg
Temperature of water entering the jackets	= 18°C
Temperature of water leaving the jackets	= 57°C
Temperature of water leaving exhaust calorimeter	= 82°C
Temperature of exhaust leaving exhaust calorimeter	= 82°C
Temperature of exhaust leaving engine calorimeter	= 410°C
Temperature of engine room	= 18°C

Determine the excess air used as a percentage of that required for complete combustion. Also draw up heat balance sheet for the engine in KJ/s. specific heat of exhaust gases is 1.05KJ/kg K.

6. a) List out the various methods of determination of frictional power and explain William's line method with a neat sketch.
b) Explain the working of pony brake with a neat sketch.

7. a) Describe with a neat sketch the construction and working of a single stage and single-acting reciprocating air compressor.
b) A single-stage reciprocating compressor takes $1m^3$ of air per minute at 1.013 bar and 15°C and delivers it at 7 bar. Assuming that the law of compression is $PV^{1.35}$ = constant and the clearance is negligible, calculate the indicated power.

8. a) What is a centrifugal compressor? How does it differ from axial flow compressor?

b) A centrifugal air compressor delivers 16.5kg/sec of air with a total head pressure ratio of 4**:**1. The speed of the compressor is 15000 r.p.m. Inlet head temperature is 20**°**C, slip factor 0.9, power input factor 1**.**04 and 80% isentropic efficiency. Calculate:

i) Overall diameter of the impeller.

ii) Power input.

CODE No.:10BT40303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

MANUFACTURING TECHNOLOGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Why directional solidification is desirable in the production of a cast product?
b) Describe some of the important features observed in the cooling curve of a pure metal.

2. a) Explain investment mold casting process with a neat sketch. What are its merits and demerits?
b) Draw a neat sketch of cupola. Explain various zones in cupola.

3. a) State the purpose of thermit welding. Where would you recommend it and why?
b) Briefly explain resistance spot and seam welding. What are the advantages?

4. a) Explain the principle of resistance welding with neat sketch.
b) What metals may be spot welded? Can dissimilar metals be spot weld? Explain.

5. Describe classification of rolling mills with neat sketches.

6. a) Discuss the hydrostatic and impact extrusion process with the help of neat sketch.
b) Briefly explain tools and dies used in forging.

7. a) Discuss the wire drawing and tube drawing with the help of neat sketches.
b) Calculate the bending force required for a 1.5mm C50 steel sheet of width 1m to be bent in a wiping die. The die radius used is 3mm. The ultimate tensile strength for C50 steel is taken as 800 Mpa.

8. What are the advantages of conventional machining processes?

CODE No.:10BT40401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

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) Give the comparison of CE,CC and CB amplifiers with respect to voltage gain, current gain , Input impedance and output impedance.
b) Find expressions for voltage gain, current gain, Input impedance and output impedances of CB amplifier using simplified hybrid model.

2. a) Discuss the different types of coupling schemes used in multistage amplifiers.
b) Three identical non-interacting amplifier stages have an overall gain of 0.3 dB down at 20 kHz compared to mid band gain. Calculate the uppercut-off frequencies of the individual stages.

3. Why is hybrid - π model called a trans- conductance model? Justify by giving relevant proofs.

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 FET and explain its operation and derive an expression for frequency of oscillations.

6. Derive the expression for the frequency of oscillations and the minimum gain required for sustained oscillations of RC phase shift oscillator.

7. a) Derive the power conversion efficiency of class - B amplifier.
b) Derive an expression for TPD.

8. Design a single stage capacitance coupled-coupled FET tuned amplifier with the following specifications: $\omega_0 = 2\pi\ (10^6)$ Hz and a mid band voltage gain of "-8". The FET parameters are as follows: $g_m = 4\times10^{-3}$ mhos. Drain resistance r_d = 18k ohm, C_{GS} = 40 pF, $C_{GD} = C_{DS}$ = 5 pF, Tuning capacitance C = 15 nF.

CODE No.:10BT40402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

PULSE AND DIGITAL CIRCUITS

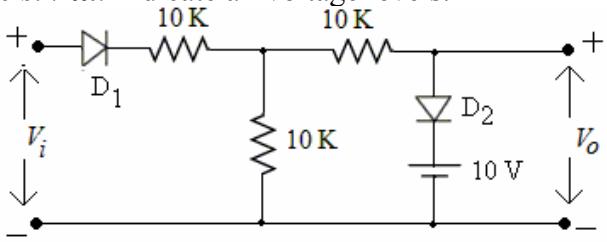
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

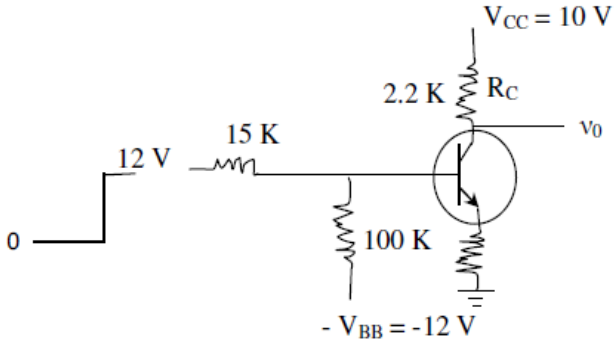
Answer any FIVE questions
All questions carry equal marks

1. a) Explain, physically and with the help of neat sketches of its response, how a "Compensated attenuator" improves the unsatisfactory response of a "simple attenuator".
b) Prove that an RC circuit behaves as a reasonably good integrator if RC > 15T, where T is the period of an input '$E_m \sin \omega t$'.

2. a) Draw the basic circuit diagram of a DC restorer circuit and explain its operation. Sketch the output waveform for a sinusoidal input signal.
b) i) The diodes are ideal. Write the transfer characteristic equations (V_0 as a function of V_i).
ii) Plot V_0 against V_i indicating all intercepts, slopes and voltage levels.
iii) Sketch V_0 if $V_i = 40 \sin \omega t$. Indicate all voltage levels.



3. a) Explain the transistor switching-times.
b) Show that the circuit given below works as a switch. Assume junction voltages and (h_{FE}) min = 60.



4. Draw the circuit diagram for Schmitt trigger and explain its operation. What are the applications of the above circuit? Derive the expressions for UTP and LTP.

5. a) Explain the basic principle of a bootstrap sweep generator. Draw the circuit and explain its operation. Derive the expression for its slope error.
b) Give the comparison of Miller time-base and Bootstrap time-base circuits.

6. a) Explain the operation of unidirection diode gate and mention its advantages and disadvantages.
b) Explain how the disadvantages of two-diode sampling gate are overcome using four diodes.

7. a) Draw and explain the block diagram of frequency divider without phase jitter.
b) Explain how the symmetrical signals are used to synchronize a sweep circuit.

8. a) Explain the characteristics of logic families.
b) Realize NAND gate in diode - transistor logic and explain its working.

CODE No.:10BT40403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

ELECTRO MAGNETIC WAVES AND TRANSMISSION LINES

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define electric scalar potential.
b) Write the Maxwell's equation for electro static fields.
c) Obtain the expression for electric flux density on the axis of a uniform charged disc.

2. a) Explain with the help of an example. How Poisson's and Laplace equations are used to solve the electromagnetic problems?
b) Determine the capacitance of a charged sphere of radius 'R'.

3. a) What is the relation between magnetic flux density and magnetic field intensity?
b) Determine the Ampere's law of force between two current carrying circuits on each other.

4. a) Express Maxwell's equations in dielectric medium in integral forms along with word statements.
b) If $\sigma = 0$, $\in = 2.5$, $\in_0$ and $\mu_0 = 10\mu_0$ determine whether or not the following pairs of fields satisfy Maxwell's equations
i) $\overline{E} = 2y\,\overline{a}y, \quad \overline{H} = 5x\,\overline{a}x$
ii) $\overline{E} = 100(\sin()\quad (6 \text{ x } (10)\uparrow 7)\,t)\sin z\overline{a}y$
$\overline{H} = -0.3128(\cos(6 \text{ x } (10)\uparrow 7)\ \cos z\overline{a}x$.

5. a) Derive the general wave equation.
b) Discuss about the plane waves in lossy dielectrics.

6. a) Assume that **E** and **H** waves, traveling in free space, are normally incident on the interface with a perfect dielectric with $\in_r = 3$. Calculate the magnitudes of the incident , reflected and the transmitted **E** and **H** waves at the incidence.
b) An uniform plane wave of 200MHz , traveling in free space impinges normally on a large block of material have $\in_r = 4$, $\mu_r = 9$, $\sigma = 0$. Calculate transmission and reflection coefficients at the interface.

7. a) For a typical open wire telephone cable the primary constants are R=10 Ω/km, L = 0.0037 H/Km, C = 0.0083 μF/Km, G = 0.4×10^{-6} mho/Km. Determine z_0 and the propagation constant at a frequency of 1 KHz.
b) Derive the expression for α and β in terms of primary constants of a line.

8. Write about the following:
i) Phase and Group velocity ii) Stub matching
iii) Loading of transmission lines iv) Smith chart

CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

SWITCHING THEORY AND LOGIC DESIGN

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Convert the following numbers
i) $(1256)_8 = (X)_2$; ii) $(FACE)_{16}$ to binary
b) Explain the 7-bit Hamming code. A receiver with even parity hamming code is received the data 1110110. Determine the correct code.

2. a) Obtain the Dual of the following Boolean expressions.
i) **(AB' + AC')(BC + BC')(ABC)**
ii) **AB'C + A'BC + ABC**
b) Design Ex-OR gate using only Four NAND gates and verify it using a truth table.
c) Develop a circuit for the given Boolean function using NAND -NAND Logic
Y= (A+C)(B' +D).

3. Find the reduced SOP form of the following function
F(W,X,Y,Z) = ∑m(0,7,8,9,10,12) + ∑d(2,5,13).

4. a) Draw the logic diagram of 4-bit adder subtractor and explain it's operation.
b) Realize the following Boolean expression using a 8×1 multiplexer.
F = A'B'C + A'BC' + AB'C + ABC

5. Derive the PLA programming table for the combinational circuit that square a 3-bit number, minimize the number of products.

6. a) Design a 4-bit up-down binary counter.
b) Design asynchronous Mod-5 counter using D flip-flops.

7. Explain the following related to sequential circuits with suitable examples:
i) State diagram
ii) State table
iii) State assignment

8. a) Write about Algorithmic State Machines.
b) Draw the block diagram and ASM chart of Binary multiplier

CODE No.:10BT40421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the circuit diagram of emitter follower circuit using NPN transistor and derive expression for $\mathbf{A_I}$, $\mathbf{A_v}$, $\mathbf{R_i}$, $\mathbf{R_o}$ using hybrid model.

b) For the emitter follower with R_s= 0.75 KΩ and R_l= 3kΩ calculate A_i, A_v, A_{vs} and R_o. Assume h_{fe} = 50, h_{ie} =1kΩ, h_{oe} = 25 μA/v.

2. a) Explain the high frequency response for BJT amplifier.

b) The input power to a device is 10,000W at a voltage of 1000V. the output power is 500W and the output impedance is 20Ω.

i) Find the power gain in decibels. ii) Find voltage gain in decibels.

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) What are the factors which affect the stability of an oscillator?

b) State and explain briefly the Barkhausen's criteria for oscillations.

c) Discus the frequency range of RC and LC oscillators.

5. a) A transistor supplies 0.85 W to a 4 kΩ load. The zero signal **dc** collector current is **31** mA, and the dc collector current with signal is **34** mA. Determine the percent second harmonic distortion.

b) Explain the term “cross over distortion” and its origin. Describe a method to minimize this distortion with suitable sketches.

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) A square wave whose peak to peak amplitude is 4 V extends $\pm$2V with respect to ground. The duration of the positive section is 0.1 s and that of the negative section is 0.3 s. If this waveform is impressed upon an RC integrating network whose time constant is 0.3 s. What are the steady state maximum and minimum values of the output waveform?

7. Explain the operation of a transistor switch with an inductive load. Make use of equivalent circuits and obtain the response of this circuit to a square wave input. Show that the circuit functions more like a differentiator.

8. a) Draw the circuit diagram of a fixed bias binary with speed up capacitors and explain it.

b) What is a monostable multivibrator? With the help of a neat circuit diagram explain the principle of operation of a monostable multivibrator and derive an expression for pulse width.

CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

COMPUTER ARCHITECTURE AND ORGANIZATION

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss about bus structures.
b) Write about floating point arithmetic operation.
c) Explain Von Neumann architecture in detail.

2. a) What is a High-Impedance state? Construct a bus system with 3-state buffers and explain briefly.
b) Why do we need addressing modes? List and explain the various addressing modes.

3. a) Differentiate Hardwired control with Micro-programmed control. Is it possible to have a hardwired control associated with a Micro programmed control ? Justify.
b) Explain the addressing sequencing for micro instructions.

4. a) Explain RISC pipe lining in detail.
b) Explain about the Array Processors.

5. a) Explain virtual memory in detail.
b) Explain input-output interface in detail.

6. Explain standard serial communication protocols in detail.

7. Explain about inter processor communication and synchronization.

8. a) List the differences between the CISC and RISC architectures.
b) Briefly explain the Power PC architecture with neat block diagram.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

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 OOP. Differentiate procedural and object oriented programming.
b) Explain about constructors and destructors.

2. a) Differentiate between method overloading and method overriding.
b) Explain about runtime polymorphism with example.

3. a) Write about the data types supported by Java?
b) Write a Java program that illustrate the usage of the `charAt()` and `setCharAt()` methods of `StringBuffer` class. Give the output.

4. a) Is JAVA support multiple inheritance? If yes How?
b) Explain the terms ***final***, ***super***, and ***this*** key words with examples.

5. a) Differentiate exception and error? Explain the keywords used in exception handling in JAVA.
b) What is the need of packages in JAVA? Explain how to create and access packages.

6. a) With the help of an example, explain multithreading by extending Thread class.
b) Explain how to create an applet and how to pass parameters to an applet.

7. a) Give the differences between `Panel` and `Frame`.
b) What is an adapter class? Describe about the `MouseAdapter` class.

8. a) Explain about MVC architecture.
b) Explain container class with an example.

CODE No.:10BT40503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

PRINCIPLES OF PROGRAMMING LANGUAGES

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State the benefits of higher-level languages compared to assembly language.
b) Explain the principles of object-oriented programming.
c) Discuss the differences between compilers and interpreters.

2. a) Differentiate between scope and extent of a variable.
b) Why pointers considered as dynamic type? Explain.

3. a) Explain Compound Statements in detail with examples.
b) Explain with examples User-located Loop Control mechanisms provided by various languages.

4. a) Discuss the design issues of Subprograms.
b) What is a Subprogram? Explain about Generic Subprograms in detail.

5. a) Define constructor and destructor.
b) Why JAVA does not have friend function or friend classes? Give any one reason.
c) Define Abstract Data Type.

6. a) Define exception, exception handler, raising an exception, disabling an exception, continuation and built-in exception.
b) What are the design issues for exception handling?

7. a) What are the features of functional programming languages? Explain.
b) Explain the concept of delayed evaluation in Lisp.

8. a) Explain the facts of PERL.
b) Discuss the compilation process in PHP.

CODE No.:10BT41001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

ELECTRICAL AND ELECTRONIC MEASUREMENTS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the use of shunt as a device for extending the range of ammeters. What are the equipments of a standard shunt which can be used on **ac** as well as **dc** for precision measurements?
b) 1 ampere passes through a load. To measure the impressed voltage, a milliammeter was used in series with a resistance of 900 ohms. The deflection indicated the impressed voltage as 10 volts and the ammeter current as 10 milliamperes. If the meter is used to measure the load current and its deflection is kept unchanged, determine the shunt resistance. The introduction of the meter effected no appreciable change.

2. a) Explain in detail about any two applications of D.C. Potentiometers with suitable diagrams.
b) Describe the construction and working of a Polar type A.C. Potentiometer with a neat diagram.

3. a) Explain the construction and principle of single phase Electrodynamo powerfactor meter.
b) A 220V, 5A **dc** energy meter is tested at its marked ratings. The resistance of the pressure coil is 8800Ω and that of current coil is 0.1Ω. Calculate the power consumed when testing the meter with phantom loading with current circuit excited by a 6V battery.

4. a) Discuss the procedure involved to measure the medium resistance using Wheatstone's bridge.
b) Explain about the Maxwell's capacitance bridge with the necessary balancing equations.

5. a) Explain Electronic Multimeter with a neat diagram.
b) Draw the block diagram of a dual-slope DVM and explain its operation.

6. a) With relevant sketch, discuss how time period is measured.
b) Write a detailed note on Frequency synthesizer.

7. a) Explain about the electrostatic and electromagnetic deflection system. Also discuss the deflection sensitivity in both cases.
b) Draw the block diagram of sampling oscilloscope and explain the function of each block.

8. a) What is the necessity of the recorders and list out the types of recorders? Explain any one of them with a neat diagram.
b) Explain with the help of a functional block diagram, the principle of working of an X-Y recorder.

CODE No.:10BT41002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

TRANSDUCERS IN INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the concepts of measurement system with its functions and data flow block diagram.
b) List the electronic measurement systems.
c) What is systematic error?

2. a) Explain zero-order measurement system with step input.
b) Define the following
i) Accuracy
ii) Precision
iii) Sensitivity
iv) Repeatability.

3. a) Describe the construction and working of Thermistor.
b) Describe the construction of foil type strain gauges and explain their advantages over wire wound strain gauges.

4. a) Discuss in detail about magnetostrictive transducers.
b) Discuss the working of Variable reluctance transducers.

5. a) Derive the expression to find the capacitance of a differential capacitor.
b) Explain how the capacitor transducers can be used for measurement of liquid level in the tank.

6. a) Explain the modes of operation of piezoelectric crystals.
b) Explain the construction and working of force balance transducers.

7. a) Explain charge amplifier and derive its output equation and frequency response.
b) With a neat block diagram explain in detail about signal conditioning.

8. a) Write short notes on magneto transistors.
b) Explain the construction and working of Fiber - optic transducer.

CODE No.:10BT41201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

DATA COMMUNICATIONS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the advantages and disadvantages of digital modulation schemes?
b) Discuss in detail about base-band transmission of M-ary data.
c) Find the channel capacity of binary erasure channel $P(x_1) = \alpha$.

2. a) Describe a transverse electromagnetic wave.
b) Comparison between optical fibre cables to metallic transmission lines.

3. a) Explain in brief the operation of time division multiplexing.
b) What signal-to-noise ratio is needed to put a T1 carrier on 50 KHz line?
c) What is the relation between the number of slots in a frame and the number of input lines for synchronous TDM? Repeat it for Asynchronous TDM.

4. a) Describe wave attenuation and absorption and the relation between them.
b) Describe ground wave, space wave and sky wave propagation.
c) Define free-space path loss.

5. a) Describe the basic operation of cordless telephone.
b) Briefly describe the function of a two-wire to- four wire hybrid set.

6. a) Describe second -generation cellular telephone system.
b) Explain the concept of cell splitting and Hand off.

7. a) Explain the concept of checksum and LRC codes.
b) Explain modem synchronization and list its function.

8. a) What are the functions of modem with neat diagram?
b) Write short notes on the following:
i) Fax modem
ii) Cable modem

CODE No.:10BT41221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

COMPUTER GRAPHICS AND MULTI-MEDIA SYSTEMS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List and explain the applications of computer graphics.
b) Explain the functioning of CRT devices with a neat cross-sectional view.

2. a) Generate all raster points on the line segments, if the two end points are given as (0,0) and (6,18) using DDA line drawing algorithm.
b) Explain the scan-line algorithm for polygon filling.

3. Give the homogeneous coordinate transformation matrices for the following transformations.
a) Scale X direction reduced to three-fourths the original,Y-direction increased by a factor of seven-fifths.
b) Counter clock-wise rotation about the origin, by 30º.

4. a) Write Weiler Atherton polygon clipping algorithm.
b) Write an algorithm to split a concave polygon using the rotational method.

5. a) Write an algorithm to display two dimensional cubic Bezier curve, given a set of four control points in the ***xy*** plane.
b) Write an algorithm for converting cylinder to a polygon mesh representation.

6. a) Explain about applications of multimedia systems.
b) Explain the data interface standards.

7. a) Discuss in brief about the CCITT Group 3,2D compression standard for binary images. Mention its advantages and disadvantages.
b) Describe the MPEG encoding technique for video.

8. a) Write in brief about the types of multimedia authoring systems.
b) Analyze the object server architecture used in a distributed multimedia system.

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

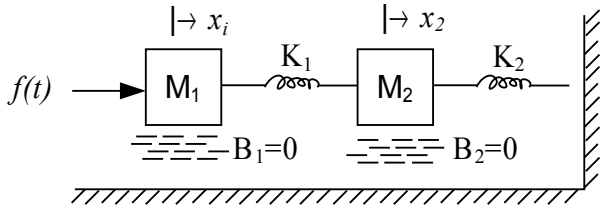
CONTROL SYSTEMS

[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) Distinguish between open loop and closed loop systems.
b) Develop the differential equations for the following system.



2. a) Define transfer function. Determine the transfer function of a dc servo motor in field control mode.
b) Draw the block diagram and signal flow graph for the above system.

3. a) A unity positive feedback control system has the plant $G(s) = \frac{k}{s(s+\sqrt{2k})}$. Find the rise time, percentage overshoot, peak time and settling time for a unit step input. For what range of ***k*** is the settling time less than 1 second?
b) Explain the effect of proportional, integral and derivative control on the closed loop system.

4. A feedback control system has an open-loop transfer function

$$G(S)H(S) = \frac{K}{S(S+3)(S^2+2S+2)}$$

Find the root locus as K is varied from 0 to ∞.

5. Draw the Bode plot of the system whose open-loop transfer function is given by

$$G(S)H(S) = \frac{K}{S(1+S)(1+0.1S)(1+0.02S)}$$

Determine the value of K for the gain margin of 10 **dB**.

6. a) What is the significance of polar plot?
b) Sketch the Nyquist plot for the open loop system = $\frac{s+2}{(s+1)(s-1)}$.

7. a) For the transfer function $G(s) = \frac{3}{s(s+1)(0.5s+1)}$ and $H(s) = 1$. Determine a compensator lag network such that closed loop transfer function will provide a phase margin of 45°
b) Explain the Lead compensator design briefly.

8. a) What are the properties of state transition matrix?
b) Construct the state model if the differential equation is $2\dddot{y} + 3\ddot{y} + 5\dot{y} + 2y = u$.

CODE No.:10BT42304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

BIOCHEMICAL THERMODYNAMICS

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State first law of thermodynamics for closed systems
b) A closed system going from state A to state B does 40 kJ of work and suffers a drop of 25 kJ in its internal energy. What is the heat effect? If the system is returned adiabatically from state B to state A, what is the work effect?

2. a) What is a closed system? What is the mathematical formulation of first law for closed systems?
b) While going from State P to State Q, a closed system absorbs 100 kJ of heat and its internal energy increases by 75 kJ. If the same operation is carried with no heat addition, what will be the work effect? For the reverse direction, if 40 kJ of work are done on the system what will be the heat effect?

3. a) State the law of corresponding states.
b) Write Vandervaals equation of state. What are the units of the constants that appear in the equation? How are these evaluated?

4. a) Show that $(\partial T/\partial V)_S = (\partial P/\partial S)_V$.
b) A particular thermodynamic system has the following fundamental relation $U = CS^2/VN$, where C is constant. Transform the given fundamental relation into the enthalpy representation.

5. a) Show the chemical potential of component is all phase are equal at equilibrium.
b) Explain briefly estimation procedure for partial property from solution property.

6. What are the criteria for phase equilibria? Prove that "multiple phases at the same T and P are in equilibrium when the chemical potential of each species is the same in all phases".

7. Derive the relation between the standard Gibbs-energy change and the equilibrium constant, $\Delta G = -RT \ln K$.

8. a) Adenosine phosphates are energy shuttles in living systems. Explain.
b) What is a yield factor? What is its significance?

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is algorithm and what are its characteristics?
b) Define time complexity. Describe different notations used to represent there complexities.

2. a) Write a greedy algorithm to the Job sequencing with deadlines.
b) Prove that the edge with the smallest weight will be part of every minimum spanning tree.

3. a) Write and explain the steps of merge sort algorithm. Also find its time complexity.
b) Write the binary search algorithm and analyze the performance. Also compare it with linear search.

4. Explain the greedy technique with the help of Huffman coding algorithm.

5. a) Explain Traveling Sales Person problem with example.
b) Differentiate between Dynamic Knapsack and Branch and Bound Knapsack problem.

6. Explain in detail about Hamiltonian cycles.

7. a) Write an algorithm to solve the Knapsack problem with the Branch and Bound.
b) Explain the principles of LIFO Branch and Bound.

8. What is the relationship between NP-Hard and NP-Complete problems? Explain in detail.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

MICRO-PROCESSOR AND INTERFACING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain why memory is segmented in 8086 and also explain how memory is addressed using segmentation.
b) Give the 16-bit flag register format of 8086 and explain about each flag in detail.

2. a) Write an ALP to find whether the given string is a palindrome or not.
b) Write an ALP in 8086 to find 2's complement of an 8 bit hexadecimal number.

3. Interface two 8Kx8 EPROM chips and two 8Kx8 SRAM chips with 8086. Select suitable address maps.

4. a) Discuss about the control word formats of 8255 and give the interpretation of each bit in the format.
b) Explain about the need for 8255 in microprocessor based systems.

5. a) Discuss Interrupt Vector table of 8086 microprocessor.
b) Draw and explain the architecture of 8259 programmable Interrupt controller.

6. a) Draw and explain the architecture of 8251 USART.
b) Explain mode word, command word and status word formats of 8251 USART.

7. a) Explain the real mode and protected mode operations of 80386 microprocessor.
b) Differentiate the paging and segmentation.

8. a) Explain the serial port operation of 8051 microcontroller.
b) Explain the interrupt structure of 8051 microcontroller.

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

OPERATING SYSTEMS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the Operating System structure and its components.
b) Write short notes on Operating System services.

2. a) Write notes on Process scheduling.
b) Explain states of process with neat sketch.

3. a) What is synchronization? Explain how semaphores can be used to deal with ***n*** process critical section problem.
b) Write notes on Reader writers' problem and the dining philosophers problem.

4. What is safe state? Write the banker's algorithm and explain it with the help of an example.

5. a) Write about internal and external fragmentation.
b) Explain any three page replacement algorithms.

6. a) What are different types of files supported by an Operating System?
b) Explain contiguous and Indexed File allocation methods in detail.

7. Explain various types of mass storage structures.

8. a) How access matrix can be used for providing protection?
b) Write and explain various misused methods of system threats.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

THEORY OF COMPUTATION

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between DFA and NFA.
b) Construct the **ε**-transition NFA for the expression (a/b)*(a*/b*)*.

2. Explain the following in details.
i) Equivalence between NFA and DFA.
ii) Mealy and Moore machine.

3. Design Push Down Automata for the language $L = \{wcw^R | w \in (0+1)^*\}$.

4. Let G be the grammar S→aB | bA, A→ a | aS | bAA , B→b | bS | aBB for the string **aaabbabbba** Find :
i) Left most derivation ii) Right most derivation iii) Parse Tree.

5. a) Eliminate ε -productions from the grammar G given as:
A → aBb | bBa
B → aB | bB |ε
b) Convert the following grammar to Greibach Normal Form.
S → ABA | AB | BA | AA |B
A → aA |a
B → bB |a

6. a) Define Context free grammar and construct a CFG equivalent to the regular grammar (011+1)* (01)*.

b) Convert the following grammar to GNF.
$\mathbf{A_1 \rightarrow A_2A_3}$
$\mathbf{A_2 \rightarrow A_3A_1|b}$
$\mathbf{A_3 \rightarrow A_1A_2|a}$

7. Prove if L and M are Regular Language then L-M is also Regular.

8. What is Universal language? Explain the undecidable problem in Universal Turing Machine.

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

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) In a Poisson distribution it is known that P(X = 0) = P(X = 1). Find λ and also P(X=2).
b) Explain the probability function of Poisson distribution and obtain its mean and variance. What is P(X = 0) for this distribution.

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

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

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

4. a) Write about Type-I error and Type-II error.
b) A population consists of five numbers 2, 3, 6, 8 and 11. Consider all possible samples of size 2 that can be drawn with replacement from this population. Find
   (i) The mean of the population. (ii) The standard deviation of the population.
   (iii) The mean of the sampling distribution of means and
   (iv) The standard deviation of the sampling distribution of means.

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

6. a) What is F-test? How do you test for the equality of variances of two independent groups?
b) The presence of a metal (in mg) in two independent samples is as follows. Test whether the means of these two groups differ significantly. (Use **α = 0.05** and $\mathbf{t_{14} = 2.145}$)

Sample-A	12	13	13	10	13	11	12
Sample-B	13	15	14	9	14	12	11

7. Write the benefits and limitations of statistical quality control?

8. Explain the terms: i) **M/M/1** Queue ii) Traffic Intensity
iii) Queue discipline and iv) Pure Birth process.

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

ENVIRONMENTAL SCIENCES

[Electronics and Communication Engineering, Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define ecosystem. Explain the role of biotic and abiotic components in the environments.
b) What are the segments of atmosphere? Explain the levels of atmosphere.

2. a) Illustrate the benefits of sustainable life styles.
b) Discuss various adverse effects of deforestation.

3. a) Write an essay on energy flow in the ecosystem.
b) Write a short note on forests grassland, pond and marine ecosystems.

4. a) Define biodiversity and explain briefly about *in situ* and *ex situ* conservation of biodiversity.
b) Explain in detail about global and national biodiversity.

5. a) Write a short note on floods, earthquakes and tsunamis.
b) Write an essay on soil pollution.

6. a) Write an essay on 'Green technology'.
b) Explain briefly about global warming and acid rains.

7. a) Environmental ethics help in protecting the environment. Prove this statement.
b) Discuss the impact of population pressure on environment.

8. a) What is meant by environmentalist's diary? Explain its importance.
b) What suggestion would you like to give the municipal authorities in your town with regard to improper drainage and garbage systems?

CODE No.:10BT3BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Find a solution of $\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u$ *where* $u(x,0) = 6e^{-3x}$ by method of separation of variables.

b) Find the complete integral of $\mathbf{y^2.p - xy.q = x(z - 2y)}$ by Lagrange's method.

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

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

4. a) State and prove Cauchy's Theorem.

b) Evaluate, using Cauchy's integral formula, $\int_C \frac{e^{2z}dz}{(z-1)(z-2)}$ where *C* is the circle $|z| = 3$.

5. a) Find Taylor's expansion of $f(z) = \frac{2z^3+1}{z^2+1}$ about the point $z = i$.

b) Discuss about singularities of an analytic function. Find the nature and location of the singularities of the function $f(z) = \frac{\tan z}{z}$.

6. a) State Residue theorem. Using Residue theorem, evaluate

$$\int_C \frac{1}{(z^2+4)^2}dz, \qquad C: |z-i| = 2.$$

b) Apply the calculus of residues, to prove that $\int_0^\infty \frac{\sin x}{x}dx = \frac{\pi}{2}$.

7. a) State Rouche's Theorem and use it to determine the number of zeros of the polynomial

$$z^7 - 5z^3 + 12 \text{ in } |z| < 1.$$

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

8. a) Find the image of an infinite strip R: $\frac{1}{4} < y < \frac{1}{2}$ of z.plane under the mapping $w = \frac{1}{z}$ in w.plane.

b) Discuss the transformation about $\mathbf{w = z^2}$

CODE No.:10BT3BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

MATRICES AND NUMERICAL METHODS

[Civil Engineering, Mechanical Engineering, Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define the rank of a matrix and find the rank of the following matrix:

$$A = \begin{bmatrix} 2 & 1 & 3 & 5 \\ 4 & 2 & 1 & 3 \\ 8 & 4 & 7 & 3 \\ 8 & 4 & -3 & -1 \end{bmatrix}$$

b) Discuss for what values of λ and μ, the simultaneous equations

x +y + z = 6; **x+ 2y + 3z = 10**; **x +2y+ λ z= μ** have

(i) no solution (ii) a unique solution and (iii) an infinite number of solutions.

2. a) Verify that the sum of the Eigen values is equal to the trace of the matrix for the matrix $A=\begin{bmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{bmatrix}$ and find the corresponding Eigen vectors.

b) Use Cayley-Hamilton theorem find $\mathbf{A^{-1}}$ and $\mathbf{A^4}$ for the matrix $A=\begin{bmatrix} 1 & 2 & -1 \\ 2 & 1 & -2 \\ 2 & -2 & 1 \end{bmatrix}$.

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

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

x	0	2	4
y	5.1	10	31.1

4. a) State appropriate interpolation formula which is to be used to calculate the value of y when x = 1.75 from the following data.

X	1.7	1.8	1.9	2.0
Y	5.474	6.050	6.686	7.389

b) Develop the relations between the difference operators

(i) $\mathbf{E = e^{hD}}$ (D is the differential operator) (ii) $(1+\Delta)(1-\nabla) = 1$ (iii) $\mu^2 = 1 + \frac{\delta^2}{4}$.

5. a) Find the first and second derivatives of the function tabulated below at the point x = 1.2.

x	1.0	1.2	1.4	1.6	1.8	2.0
y	0	0.128	0.544	1.296	2.432	4.00

b) Evaluate $\int_1^7 \sin(x^2)dx$ taking seven ordinates, using Simpson's **1/3rd** rule.

6.

a) Tabulate y(0.1), y(0.2) and y(0.3) using Taylor's series method given that $\frac{dy}{dx} = y^2 + x$ and y(0)=1.

b) Use Runge-Kutta method of order four to compute the value of 'y' when 'x=0.4' in steps of 0.2 given that $\frac{dy}{dx} = y^2 + 1$ and y(0)=0.

7.

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

b) A tightly stretched string of length l with fixed ends is initially in equilibrium position. It is set vibrating by giving each point a velocity $v_0 \sin^3 \frac{\pi x}{l}$. Find the displacement y (x, t).

8. a) Expand f(x) = 1 in (0, π) as a Fourier Sine series.

b) Is the function f(x) = $\begin{cases} -x^2 ; & -\pi \le x \le 0 \\ x^2 ; & 0 \le x \le \pi \end{cases}$ even or odd? Expand f(x) as a Fourier series.

CODE No.:10BT30101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

MECHANICS OF SOLIDS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) (i) What is Generalized Hooke's law? Write the governing equations.
(ii) Differentiate Resilience and Toughness
b) The maximum shear stress at a point in a stressed body is given as 1.58Mpa. The direct stress on the plane of maximum shear stress is 1.5Mpa and the principle plane makes an angle of 28 degrees from x-axis. Find the state of stress at that point.

2. a) Obtain the relationship between shear force and bending moment.
b) Draw the SFD and BMD for the following beam shown in Fig.1

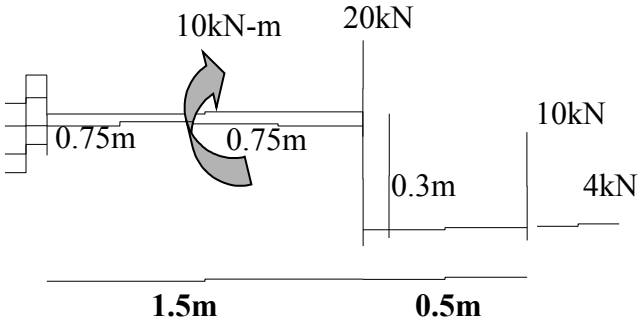


Fig. 1.

3. a) A cantilever beam of rectangular cross section (10cm breadth and 20cm depth) is subjected to a concentrated load of 1000N at the free end. The length of the beam is 3.0m. Find the maximum bending stress induced in the beam.
b) For a circular section of diameter D, determine formula of shear stress at a distance "a" from neutral axis at a section of a beam where shearing force is "F" also find the ratio of q_{max}/q_{ave}.

4. a) Derive an expression for the rotation of a closely coiled helical spring subjected to axial couple.
b) A truck weighing 20kN and moving at 5kmph has to be brought to rest by buffer springs. Find the required number of springs, each of 15 coils to store the energy of motion during a compression of 150mm. Each spring is made of 25mm diameter steel rod at 200mm mean diameter. Take G = 95GPa.

5. a) Derive torsion equation.
b) Determine the power transmitted by a solid shaft of 120 mm diameter rotating at 100 r.p.m., if the maximum shear stress is not to exceed 80 MPa. The maximum torque is 20 % more than its mean value.

6. A close coiled helical spring, made out of 8mm diameter wire has 18 coils. Each coil is of 8 cm mean diameter. If the maximum allowable shear stress in the spring is 140Mpa. Determine the maximum allowable load on the spring and elongation of the spring. Also, determine the stiffness of the spring.

7. A thick cylinder of steel, having an internal diameter of 10cm and an external diameter of 20cm, is subjected to an internal pressure of 80Mpa and an external pressure of 10Mpa. Find the maximum normal and shearing stress in the cylinder and calculate the change of external diameter. Take E=200Gpa and μ=0.3.

8. a) What is the criterion to differentiate the given shell is thick and thin?
b) Derive the expressions for hoop and longitudinal stresses induced in a thin cylindrical shell of internal diameter "d" and wall thickness "t "subjected to an internal fluid pressure "p".

CODE No.:10BT30102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

BUILDING MATERIALS AND CONCRETE TECHNOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain different methods of quarrying stones.
b) Explain:
i) Hoffman's kiln and ii) Bull's trench kiln.

2. a) Explain the various field and laboratory tests on cement.
b) Write short notes on classification of lime.

3. a) Describe the field tests for cement.
b) What are the advantages and disadvantages of natural seasoning of timber?

4. a) Explain the use of aluminum and asbestos as building materials.
b) Write short notes on fiber reinforced plastics and galvanized iron.

5. a) Explain the various ingredients of cement concrete and their importance.
b) Explain the effect of time and temperature on workability.

6. Explain Schmidt Rebound Hammer test in detail.

7. a) Explain the factors influencing the shrinkage of concrete.
b) Design M 20 grade of concrete with medium workability using the following data:
Maximum size of aggregate: 20 mm
Specific gravity of cement: 3.15
Specific gravity of coarse aggregate: 2.65
Specific gravity of fine aggregate (Zone III): 2.60
Adopt IS code method.

8. a) Explain the properties of polymer concrete.
b) Discuss the properties of fresh and hardened Self Compacting Concrete.

CODE No.:10BT30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

BASICS OF ELECTRICAL AND MECHANICAL TECHNOLOGY

[Civil Engineering]

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

(Minimum of two questions from each part should be chosen for answering five questions)
All questions carry equal marks

PART - A

1. a) Obtain the expressions for star-delta equivalence of Resistive Networks.
b) Explain different types of cables.

2. a) Explain the principle of operation of DC generator. Derive its **emf** equation.
b) Mention different types of DC generators and draw their electrical representation.

3. a) What are the different losses that occur in transformer? Which losses vary with load? How?
b) Derive the condition for maximum efficiency of a transformer.

4. a) Explain the determination of voltage regulation using synchronous impedance method.
b) A 3-Φ, 6 pole, 50Hz cage motor is running with a slip of 4%. Determine the following:
i) Speed of rotating field relative to stator winding.
ii) Motor speed.
iii) Slip speed.
iv) Frequency of the **emf** induced in the rotor.
v) Speed of rotation of rotor **mmf** relative to rotor winding.
vi) Speed of rotation of rotor **mmf** relative to stator winding.

PART - B

5. a) Classify the welding process and explain the basic principle of arc welding.
b) Explain TIG welding process with the neat sketch.

6. a) Explain the working of four stroke compression ignition engine.
b) Write the difference between petrol engine and diesel engine.

7. a) Explain vapour absorption system of refrigeration.
b) What is air conditioning? Explain the comfort air-condition system.

8. a) Explain the working principle of multi-stage compressor with a neat sketch.
b) Write short note on the following:
i) Concrete mixer
ii) Bull dozers
iii) Belt Conveyors

CODE No.:10BT30104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

SURVEYING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

2. a) State the advantages and disadvantages of plane table survey.
b) Given below are the bearings observed in a traverse survey conducted with a prismatic compass at a place where local attraction was suspected.

Line	F.B	B.B
AB	124° 30′	304° 30′
BC	68° 15′	246° 00′
CD	310° 30′	135° 15′
DA	200° 15′	17° 45′

At what stations do you suspect local attraction? Find the correct bearings of the lines and the included angles.

3. a) Write the uses of contour maps.
b) The following staff readings were observed successively with a dumpy level, the instrument having been moved after third, sixth and eighth readings.

2.228, 1.606, 0.988, 2.090, 2.864, 1.262, 0.602, 1.982, 1.044, 2.684 m.

Enter the above readings in a page of a level book and calculate the R.L. of points if the first reading was taken with a staff held on a bench mark of 432.384 m. Also perform arithmetic check. Use height of instrument method.

4. Determine the capacity of a reservoir from the following data:
Maximum water level = 260 m
River bed level = 140 m

RLs	Area(m^2)
260	41,500
240	38,500
220	31,500
200	25,700
180	21,500
160	17,500
140	12,500

5. What is a "Gale's traverse table"? Where it is used? Draw a traverse table and give the procedure of calculations in steps.

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

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

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

7. a) Draw a simple circular curve and show the various elements of the curve.
b) Two straights of a road intersect at a chainage of 2550**.**5 m having an angle of intersection of **110°**. Find the various elements of a simple circular curve of 4° to be introduced between the straights.

8. a) What is a satellite station?
b) From a satellite station S, 10**.**55 m to the west of the main station B the following angles were measured.

Angle BSC = 75° 20′ 30″, Angle CSA = 53° 30′ 30″. The station S and C are to the opposite sides of the line AB. Calculate the true angle ABC if the lengths AB and BC are 5200**.**5 m and 4930**.**3 m respectively.

CODE No.:10BT30105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

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) Viscosity ii) Compressibility of fluids, mentioning their practical applications. Also state their units in SI.
b) The surface tension of water in contact with air at 20° C is 0.725 kgf/m. The pressure inside a droplet of water is to be 0.02 N/cm^2 greater than the outside pressure. Determine size of the droplet of water.

2. a) Derive expressions for total pressure and centre of pressure for a vertically immersed surface.
b) A triangular gate which has a base of 1.5m and an altitude of 2m lies in a vertical plane. The vertex of the gate is 1m below the surface in a tank which contains oil of specific gravity 0.8. Find the force exerted by the oil on the gate and the position of the centre of pressure.

3. a) State law of conservation of mass and derive corresponding mathematical expression for a two-dimensional steady incompressible flow in cartesian coordinates.
b) An airplane is observed to travel due north at a speed of 240 kmph in a 80 kmph wind from north-west. What is the apparent wind velocity observed by the pilot? What is the apparent wind direction?

4. a) State and prove Bernoulli's equation.
b) Water is flowing at the rate of 40 lit/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/m^2 and 100KN/m^2 respectively, find the difference in datum head.

5. a) Derive the formulae for calculating loss of head due to
i) Sudden enlargement ii) Sudden contraction
b) Two pipes of lengths 2500m each and diameters 80cm and 60cm respectively, are connected in parallel. The co-efficient of friction for each pipe is 0.006. The total flow is equal to 250 lit/s. Find the rate of flow in each pipe.

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° is 50 cm and coefficient of discharge is 0.62. The flow measured by it is to be within an accuracy of $\pm 1.5\%$. Find the limiting values of the head.

7. a) Show that the velocity distribution in a viscous flow through a pipe resembles letter 'D'.
b) Differentiate between hydrodynamically smooth and rough boundaries.

8. a) Describe the Rayleigh's method for dimensional analysis.
b) The resistance R, to the motion of a completely submerged body depends upon the length of the body L, velocity of flow V, mass density of fluid ρ and kinematic viscosity ν of fluid. By dimensional analysis prove that $R = \rho V^2 L^2 \varphi [V L / \nu]$.

CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

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 0.25 mm. Take surface tension of water is 0.0735 N/m.

2. a) Derive continuity equation for one dimensional flow.
b) A 2m long conical tube is fixed vertically with its smaller end upwards. It carries liquid (G=0.85) in downward direction. The flow velocities at the smaller and larger ends are 5m/s and 2m/s respectively. The pressure head at the smaller end is 2.5m of liquid. If the loss of head in the tube is $\frac{0.35(V_1 - V_2)^2}{2g}$ (V_1 and V_2 being the velocities at the smaller and larger ends respectively), determine the pressure head at the larger end.

3. a) A venturimeter is used to measure the flow of petrol in a pipeline which is inclined at 45° to the horizontal. The specific gravity of petrol is 0.81. The diameter of the pipe is 0.3 m and the throat area ratio of the venturimeter is 4. If the difference in mercury levels recorded by a differential manometer is 50 mm, determine the flow rate of petrol in lit/hr. Take $C_d = 0.975$.
b) Compare the discharge of 15 cm and 30 cm diameter CI pipes where the loss of head due to friction in each is same. Consider that both pipes are of same length and the friction factor is same.

4. a) Derive from first principles the Euler's momentum equation for hydraulic machines.
b) A curved plate deflects a 75 mm diameter horizontal jet by an angle of 45°. Assuming no friction losses, compute the components of the force exerted on the plate. The velocity of the jet is 40 m/s.

5. a) Explain with a neat sketch, the layout of a hydro-electric power plant.
b) Explain the pumped storage plants with a neat sketch.

6. a) What are the functions of spiral casing, guide vanes and draft tube in a reaction turbine?
b) An inward flow reaction turbine has a wheel 60 cm in diameter and 5 cm wide at the outer rim, the inner diameter being 0.65 times the outer diameter. The blade angles at inlet and outlet are 75° and 14° respectively. The velocity of flow is uniform throughout the wheel. 8% of the circumferential area of the runner is blocked by the blade thickness. If the head of the turbine is 55 m, the hydraulic efficiency 88% and overall efficiency 81%, determine the speed and output of the turbine and discharge it would require. Assume radial flow at the outlet.

7. a) Define the specific speed of a turbine. Derive an expression for the specific speed.
b) Explain the term 'Governing of a turbine'. Describe the working of an oil pressure governor.

8. a) Define slip, percentage slip and negative slip of a reciprocating pump.
b) Find the number of pumps required to take water from a deep well under a total head of 120m. All the pumps are identical and are running at 800 r.p.m. The specific speed of each pump is given as 25 while the rated capacity of each pump is 0.16m^3/s.

CODE No.:10BT30201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

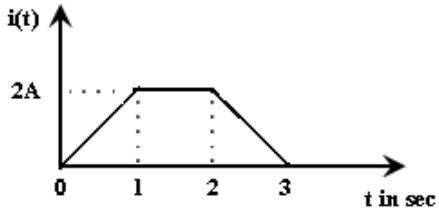
ELECTRICAL CIRCUITS

[Electrical and Electronics Engineering]

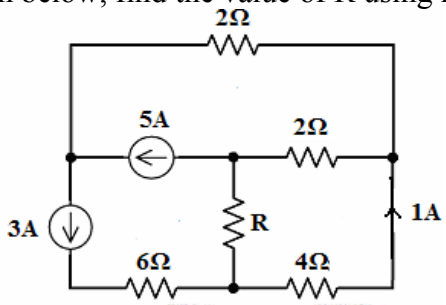
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

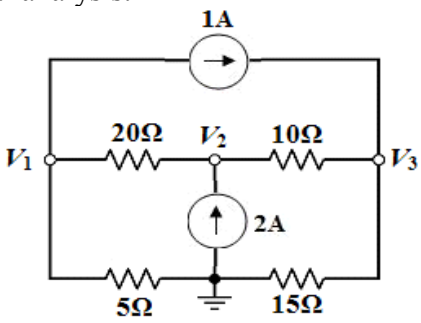
1. a) Explain the terms: Unilateral and Bilateral elements.
b) Explain the terms: Active elements and Passive elements.
c) The following current wave form **i(t)** is applied to an inductor of 2 H. Sketch the waveforms of voltage and energy in the inductor.



2. a) In the circuit shown below, find the value of R using mesh analysis.



b) Find the nodal voltages and the power delivered by the 2A current source in the circuit shown below, using the nodal analysis.



3. a) Derive the expression for RMS value of alternating current wave $\mathbf{I} = I_m \text{ Sin } \omega t$.
b) A sinusoidal alternating current of frequency 25 Hz has a maximum value of 100A. How long will it take for the current to attain 20 A.

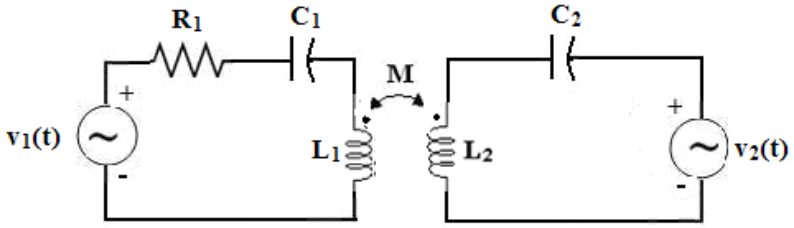
4. a) Show that power dissipated by a pure capacitor exited by a sinusoidal voltage source $V=V_m \text{ Sin } \omega t$ is zero.
b) A circuit consisting of three branches, Z_2 is in parallel with Z_3 the combination is in series with Z_1 having the values $\mathbf{Z_1=10 + j30}$, $\mathbf{Z_2 = 5 +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

5. a) Write the advantages of a poly phase system over a single phase system and explain the significance of phase sequence.

b) Two wattmeters connected to measure the power input to a 3-phase circuit indicate 15 kW and 1.5 kW respectively, the latter reading being obtained after reversing the current coil connections. Calculate the power and power factor of the load.

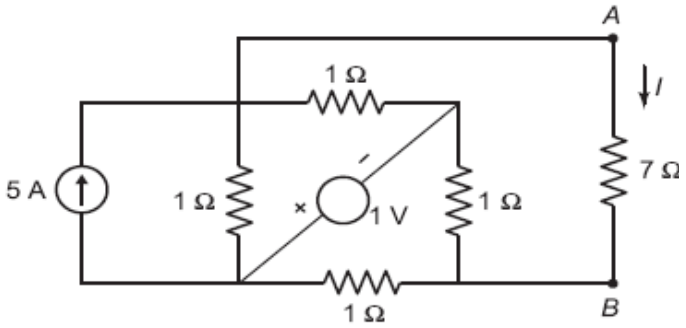
6. a) Compare the magnetic circuit with electric circuit.

b) Write the loop equations for the circuit shown below.



7. a) State and explain Thevenin's theorem.

b) Find the current in 7Ω resistor across AB of the network shown in below figure using superposition theorem.



8. a) State and explain Tellegen's theorem.

b) State and explain compensation theorem for **ac** network by taking any one example.

CODE No.:10BT30202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

DC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) All energy conversion devices use magnetic field as a coupling medium rather than electrical field. Explain why?
b) Derive an expression for the magnetic force developed in linear magnetic system.

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

3. a) Distinguish between self excited and separately excited dc generators. How are self excited generators classified? Give their circuit diagrams.
b) A 4-pole dc shunt generator with lap connected armature has field and armature resistances of 80 Ω and 0.1Ω respectively. It supplies power to 50 lamps rated for 100V, 60W each. Calculate the total armature current and the generated emf by allowing a contact drop of 1V per brush.

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) Explain the working of equalizer bar in parallel operation of **dc** series generator.
b) Draw and explain the characteristics of separately excited **dc** generators.

6. a) Explain the back **emf** in a **dc** motor. Explain the effect of field current on the speed of **dc** motor.
b) A 4-pole **dc** series motor has wave connected winding with 600 conductors. Total resistance of motor is 0.8 ohms. When fed from 250V dc source, the motor supplies a load of 10 kW and takes 50A with a flux per pole of 3mWb. For these operating conditions, calculate the developed torque and the shaft torque.

7. a) What is meant by speed control of a **dc** motor? Explain the various methods.
b) A 200 V shunt motor has armature and field resistance of 0.1Ω and 200Ω, respectively. The motor is driving a constant load torque and running at 1200 rpm drawing 10A current from the supply. Calculate the new speed and armature current if an external armature resistance of value 15Ω is inserted in the armature circuit. Neglect armature reaction and saturation.

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.:10BT30221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

BASIC ELECTRICAL ENGINEERING

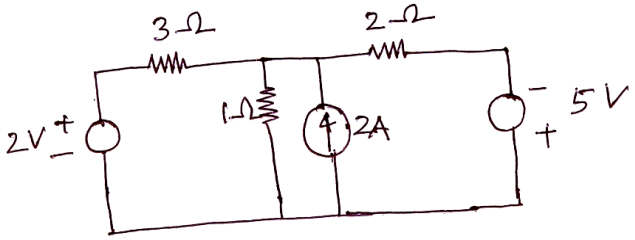
[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define the terms Fuse and Earthing.
b) The resistance of two wires connected in series is 20 Ω and in parallel is 4.8 Ω. Find the value of each resistance.

2. a) State and explain superposition theorem.
b) Use mesh current method to determine the current in the 1Ω resistor in the circuit given below.



3. a) Define 'phasor' and how it helps in representing alternating quantities.
b) A capacitor connected to a 230V, 50Hz supply draws 15A. What current will it draw when the capacitance and frequency are both reduced to half?

4. Three equal impedances each having a resistance of 25Ω and a reactance of 40Ω connected in star to a 400V, 3-Phase, 50Hz supply system.
Calculate:
i) The line current ii) Power factor iii) Power consumed by the circuit.

5. a) Explain the principle and operation of a d.c. generator.
b) Derive the torque expression of a d.c. motor.

6. a) Give brief constructional details of an Induction Motor.
b) Explain Open-Circuit and Short-Circuit tests of a single-phase transformer.

7. Write short notes on the following :
a) AC tachometers
b) Voltage stabilizers
c) Uniterruptible power supplies(UPS).

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

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CODE No.:10BT30222

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

FOUNDATIONS OF ELECTRICAL ENGINEERING

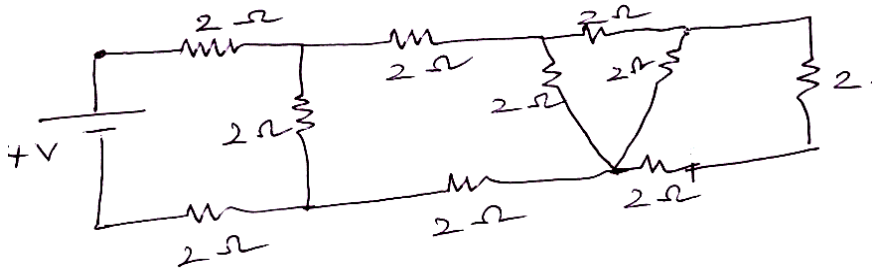
[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the volt-ampere relations for R, L and C Parameters.
b) Derive the expression for the energy stored in an ideal inductor.
c) State and explain Kirchoff's current law and voltage law.

2. a) State maximum power transfer theorem with an example of dc circuit.
b) Obtain the Thevenin's equivalent circuit of the following network:



3. a) Explain the significance of J operator in AC circuits.
b) The potential difference measured across a coil is 30V when a direct current of 5A is passed through it with an alternating current of 5 A at 40 Hz, the **pd** across the coil is 140V. If the coil is connected to a 230-V, 50-Hz supply, calculate the current, active power and power factor.

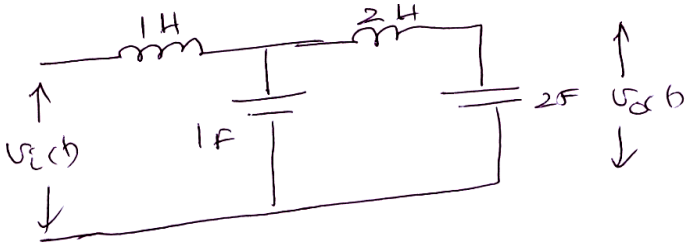
4. a) Derive the emf equation of d.c generator.
b) A 250V d.c. shunt motor takes 41 amps at full load. Find the back **emf** on full load if the resistances of motor armature and shunt field windings are 0.1 ohms and 250 ohms respectively.

5. Explain the constructional details and principle of operation of three phase induction motor.

6. a) Explain the classification of Electrical Instruments.
b) Discuss the advantages and disadvantages of Moving Iron and Moving Coil Instruments.

7. a) Write merits and demerits of open loop and closed loop control systems.
b) Write briefly about linear and non linear control systems with examples.

8. a) Define 'transfer function' applied to Single Input Single Output systems.
b) Derive the transfer function of the following system:



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

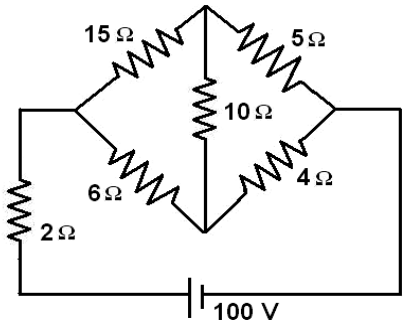
CIRCUIT THEORY

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

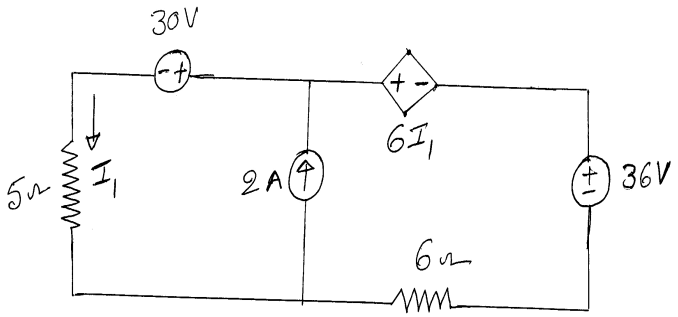
Time: 3 hours **Max. Marks: 70**

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 10 Ω resistor using Kirchhoff's laws for the following circuit.

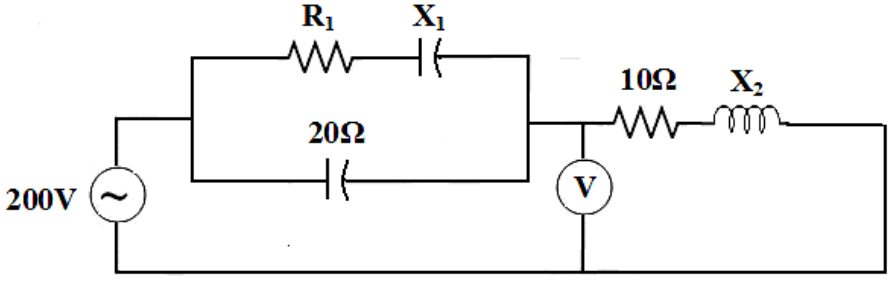


2. a) Explain the importance of Nodal and Mesh analysis.
b) Find the current passing through 5Ω resistor by using Nodal method in the figure shown below:



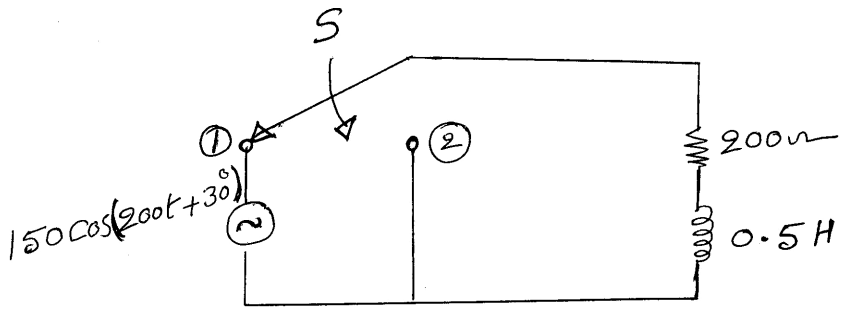
3. a) Define average value, RMS value, form factor and peak factor.
b) Obtain average value, RMS value, form factor and peak factor of a full wave rectified sine wave.

4. a) Show that the resonant frequency is the geometric mean of two half power frequencies.
b) The circuit shown below takes 12A at a lagging power factor and dissipates 1800Watts. The reading of the voltmeter is 200V. Find R_1, X_1 and X_2.



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

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

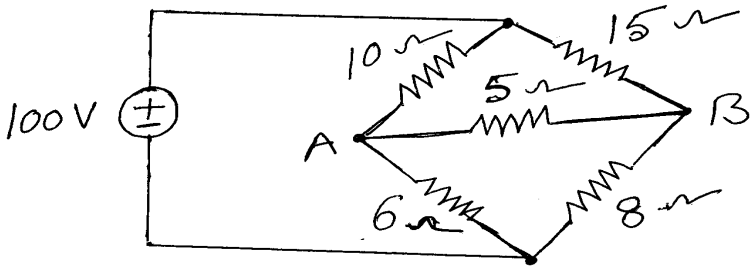


6. a) Explain concept of self and mutual inductance and write about dot rule.

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.

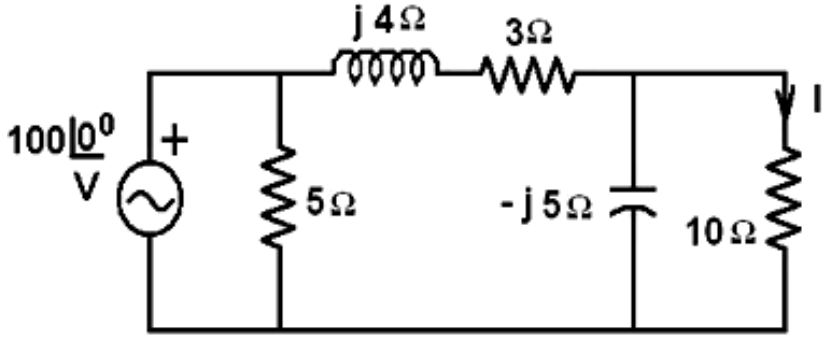
7. a) State and explain superposition theorem.

b) Use Thevinin's theorem to find the current through 5Ω resistor in below figure.



8. a) State and Explain Reciprocity Theorem.

b) Verify Reciprocity Theorem for the circuit shown below.



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CODE No.:10BT30224

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List out and define the electrical parameters used in electrical circuit.
b) Show that the rate at which energy is stored by the inductor equal its reactive power requirements.
c) An impedance (5+j12) is connected across a 26 Volts rms voltage. Determine and compare the power in the circuit using the formulae i) $P = \mathbf{V^2 / R}$ ii) $\mathbf{P = I^2R}$.

2. a) What is the purpose of using 3 point starter in a DC machine? Explain the operation with neat diagram.
b) A 4 pole wave connected dc generator having 60 slots on its armature with 6 conductors per slot, run at 750 rpm and generate an open circuit voltage of 230V. Find the useful flux per pole.

3. a) What are the different losses occur in a transformer? Derive the condition for maximum efficiency of the transformer.
b) Consider a 20KVA, 2200/220V, 50Hz transformer. The OC/SC test results are as follows:
OC Test : 220V, 4.2A, 148W (low voltage side)
SC Test : 86V, 10.5A, 360W (high voltage side)
Determine the regulation at 0.8 **pf** lagging at full load.

4. a) What is an alternator? What is its operating principle and derive its e.m.f equation?
b) Determine the voltage regulation of a 2000V single-phase alternator giving a current of 100A at 0.8 **pf** lead from the test results. Full-load current 100A is produced on short-circuit by a filed current of 2.5A. An e.m.f. of 500V is produced on open circuit by the same excitation. The armature resistance is 0.8 ohms.

5. a) Write a short note on the L and PI section filters.
b) For a half-wave rectifier with a resistive load, determine the following:
i) Average value of the current ii) RMS voltage
iii) PIV iv) dc load voltage and v) Ripple factor

6. a) Why a transistor needs biasing? Explain.
b) Derive the expression for the frequency of oscillations for the RC phase shift Oscillator.

7. Why electric heating is preferred over other forms of heating? What are different methods of heat transfer and under what conditions heat transfer by radiation is efficient?

8. a) Explain the principles of CRT in detail.
b) Describe briefly how frequency and phase angle can be measured with CRO.

CODE No.:10BT30301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

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 $E = 3K(1-2\gamma)$.
b) A bar *AD* as shown in Fig.1 is made of steel is placed between two rigid supports *A* and *D*. The bar is loaded at *B* and *C*. Find the stresses in the portion *AB*, *BC* and *CD*. The area of the bar is 4900 mm^2 and young's modulus of steel is $\mathbf{2.1 \times 10^5 N/mm^2}$.

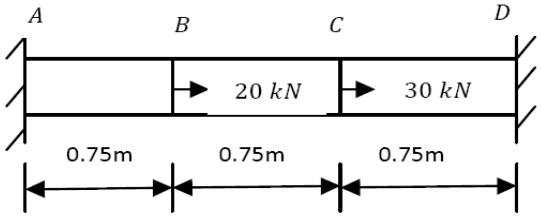


Fig. 1

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

3. a) 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 900 *N/m* in compression with a maximum load of 45N and the maximum shear stress of 120 MPa. The solid length of the spring is 42mm. Determine the mean coil diameter, wire diameter and the number of coils. $G = 40\ GPa$.

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

7. Prove that volumetric strain in case of a thin cylinder subjected to internal fluid pressure is equal to two times the circumferential strain plus longitudinal strain.

8. A steel tube of 200 mm external diameter is to be shrunk onto another steel tube of 60 mm internal diameter. The diameter at the junction after shrinking is 120 mm. Before shrinking on the difference of diameters at the junction is **0.08** mm. Calculate the radial pressure at the junction and the hoop stresses developed in the two tubes after shrinking. $\mathbf{E = 2 \times 10^5\ N/mm^2}$.

CODE No.:10BT30302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

MATERIALS SCIENCE AND METALLURGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. What is the effect of grain boundaries on properties of metals?

2. What is solid solution and explain various types of solid solutions with neat sketches?

3. a) Discuss the importance of phases and phase diagrams to a metallurgist.
b) What is a eutectic temperature? Explain.

4. Explain and classify cast irons.

5. a) Define the term heat treatment and explain various stages in a heat treatment cycle.
b) Normalized steels are stronger than annealed steels. Explain.

6. Give the structures and properties of Aluminium and its alloy.

7. How ceramic materials are classified? Discuss each class with their properties and applications.

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) Regular/Supplementary Examinations November - 2014

THERMODYNAMICS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Differentiate between Microscopic and Macroscopic approaches in Thermodynamics.
b) Differentiate between thermal and thermodynamic equilibrium. From conceptual point of view, how does work transfer and heat transfer differ?

2. a) Derive the expression for exit velocity in a Nozzle using SFEE.
b) In an air refrigerating unit, air at a pressure of 300 kPa and at a temperature of 60°C flow steadily into the turbine with a velocity of 44 m/sec. The air leaves the turbine at a pressure of 12 kPa, a temperature of 5°C and a velocity of 145 m/sec. The work done by the turbine is 52 kJ/kg of air. Neglecting the potential energy changes, calculate the magnitude and sign of the heat transfer per unit mass of air flowing. Consider C_p for air 1.005 kJ/kgK and enthalpy $h = C_p t$.

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

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

5. Steam at 10 bar, 250°C flowing with negligible velocity at the rate of 3 kg/min mixes adiabatically with steam at 10 bar, 0.8 quality, flowing also with negligible velocity at the rate of 5 kg/min. The combined stream of steam is throttled to 5 bar and then expanded isentropically in a nozzle to 2 bar. Determine (i) the state of steam after mixing, (ii) the increase in entropy due to throttling and (iii) exit area of the nozzle. Neglect KE of steam at the inlet to the nozzle.

6. a) Derive the expression of work transfer for an ideal gas in a reversible isothermal process.
b) The pressure and volume of a gas, during a process, changes from 1 bar absolute and 2 m^3 respectively to 6 bar absolute and 0.4 m^3 respectively. During the process the increase in enthalpy of the gas is 200 kJ. Taking C_v = 10.4 kJ/kgK, calculate C_p, R and ΔU.

7. a) Define the following:
i) Partial pressure ii) Mole fraction iii) Volume fraction of a gas constituent in a mixture.
b) A mixture of CO and O_2 is to be prepared in the proportion of 7.1 kg to 4.2 kg in a vessel of 0.32 m^3 capacity. If the temperature of the mixture is 16°C, determine the pressure to which the vessel is subjected. If the temperature is raised to 42°C, what will be the pressure in the vessel?

8. a) Write short notes on:
i) Dry bulb temperature ii) Wet bulb temperature
iii) Specific humidity iv) Adiabatic saturation process.
b) Air at 42°C DBT and 28°C WBT is to be cooled and dehumidification by passing it over a refrigerant filled coil to give a final condition of 16°C and 90% RH. Find the amounts of heat and moisture removed per kg of dry air.

CODE No.:10BT30304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

MACHINE DRAWING

[Mechanical Engineering]

Time: 4 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

I. Answer any TWO questions [2x4=8]

1) Sketch the conventional representation of the following
   (a) Steel (b) Helical compression spring (c) Chain wheel (d) Slotted head

2) Sketch any two of the following
   (a) Clearance fit
   (b) Shaft base system
   (c) Rough machining
   (d) Representation of cutting plane

3) Draw the following
   (a) Allowances (b) Upper hole limit

4) Draw the following
   (a) Gib-head key (b) Wood - ruff key

II. Answer any TWO questions [2x10=20]

1. Draw the half sectional front view from front (with top half in section) and the view from side of a Cotter Joint of Socket and Spigot type, to connect two rods of 50 mm diameter each.

2. Draw the sectional view from front and the view from above of
   i) Single Riveted, Single Strap Butt Joint
   ii) Single Riveted Lap Joint, to join plates of 10 mm thickness.

3. Draw the half sectional view from front (Top half in section) and the view from the side of a Rigid Flange Coupling to connect two shafts, each of diameter 50 mm.

III. Answer any ONE question [1x42=42]

1. Assemble all parts of the Screw jack shown in Figure-1 and draw
   i) Front view - right half in section
   ii) Top view

2. Prepare the part drawing of the single tool post as shown in Figure-2 and indicate dimensions, fits and tolerances if any.

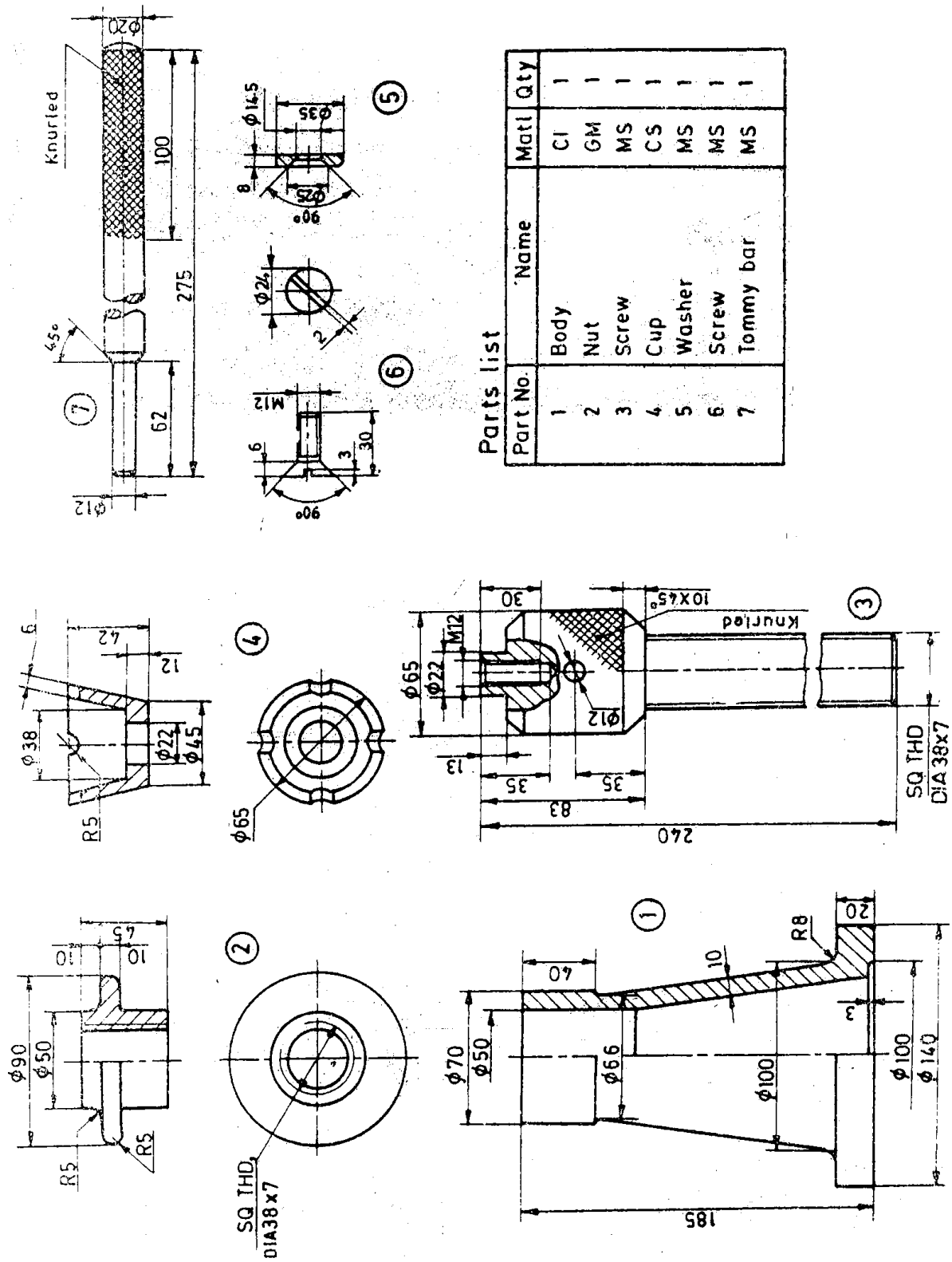
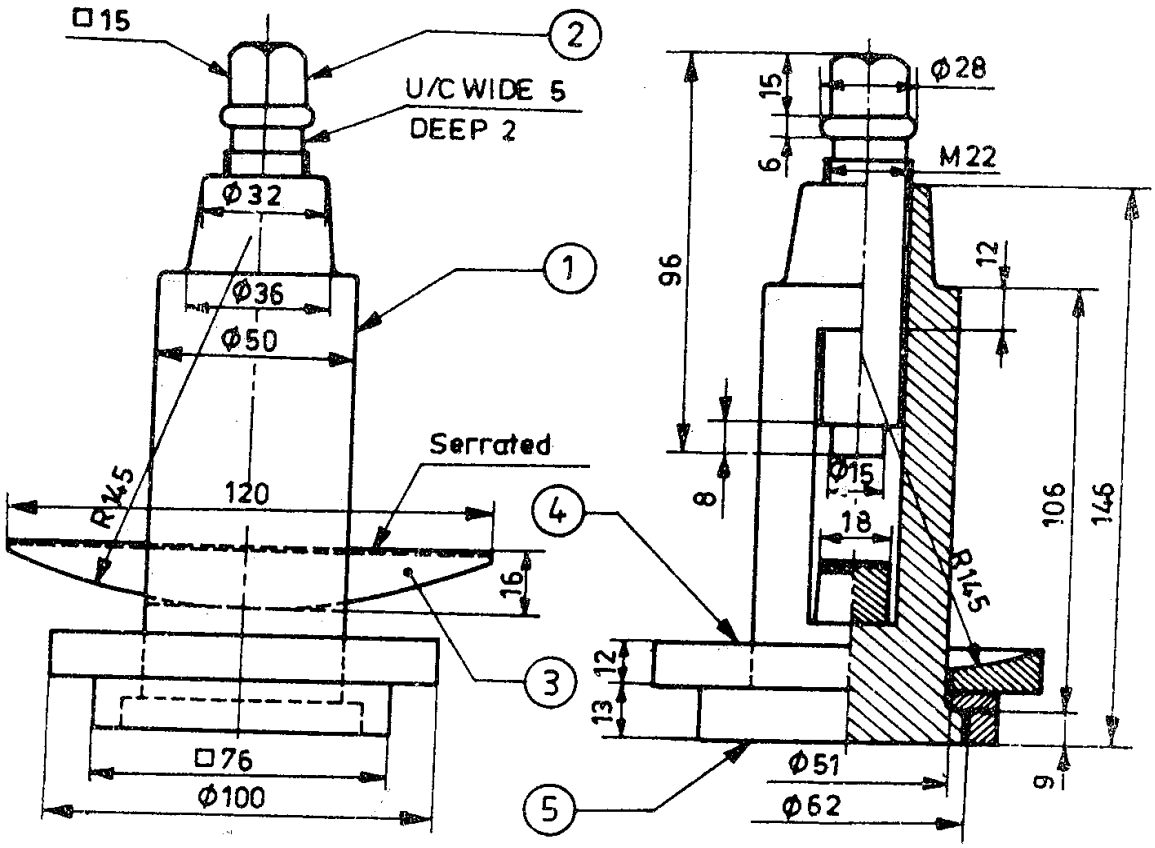


Figure-1 SCREW JACK



Parts list

Part No.	Name	Material	Qty
1	Body	MS	1
2	Clamp screw	MCS	1
3	Wedge	C I	1
4	Ring	MS	1
5	Square block	MS	1

Figure-2: Single tool post

CODE No.:10BT30401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

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 process of breakdown of a p-n junction diode due to Avalanche effect and Zener effect.
b) Write a short note on
i) Junction capacitance.
ii) Temperature dependence of V-I characteristics.
iii) V-I characteristics of p-n diode.

2. a) Define the terms as referred to FWR circuit:
i) PIV ii) Average DC voltage iii) RMS Current iv) Ripple factor

b) A FWR supplies a load requiring 300V at 200mA. Calculate the transformer secondary voltage for;
i) A capacitor input filter using a capacitor of 10mA
ii) A choke input filter using a choke of 10H and a capacitance of 10mF. Neglect the choke resistance.

3. a) With neat diagram explain the various components in a p-n-p transistor.
b) Explain the input and output characteristics in CB configuration.

4. a) Determine the operating Point of potential divider Biasing circuit with $\mathbf{R_2 = R_c = 5}$ k ohm, $\mathbf{R_E = 1}$ k ohm and $\mathbf{R_1 = 40}$ k ohm
b) Distinguish ***dc*** and ***ac*** load lines with suitable diagrams.

5. a) State and explain Miller's theorem.
b) Indicate active, cutoff and saturation regions of output characteristics of CE amplifier and explain significance of curve qualitatively.

6. a) Explain with neat diagram the structure and characteristics of depletion-MOSFET.
b) What are the advantages of JFET?

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

8. a) Write clearly about the characteristics of SCR with all required diagrams.
b) Write about η and its significance in UJT.

CODE No.:10BT30402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

PROBABILITY THEORY AND STOCHASTIC PROCESSES

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Give the axiomatic definition of probability.
b) A bag contains 5 balls and it is not known how many of them are white. Two balls are drawn at random from the bag and they are noted to be white. What is the chance that all the balls in the bag are white.
c) A fair die is rolled 10 times. Find the probability that "two" will show thrice.

2. a) Define and explain the Gaussian random variable.
b) Explain the following random variables with their functions.
i) Poisson. ii) Exponential.
iii) Rayleigh. iv) Binomial.

3. a) State and prove Chebychev's inequality.
b) Find mean and variance of binomial density function.

4. a) Given the random variable X with density function
$\mathbf{f_X(x)=2x}$; $\mathbf{0<x<1}$ and 0 elsewhere 0. Find the **pdf** of $\mathbf{y = 8x^3}$
b) Three balls are drawn at random with out replacement from a box containing 2 white, 3 red and 4 black balls. If X denotes number of white balls drawn, find the joint probability of (X,Y).

5. a) Define random variables **V** and **W** by
$$\mathbf{V = X + aY}$$
$$\mathbf{W = X - aY}$$
Where **a** is real number and **X** and **Y** are random variables. Determine **a** in terms of **X** and **Y** such **V** and **W** are orthogonal.
b) Explain about jointly Gaussian random variables.

6. a) A random process is defined by $X(t)$ = A, where A is a continuous random variable uniformly distributed on (0, 1). Determine the form of the sample functions, classify the process.
b) Define a random process by $X(t)$ = A cos (πt), where A is a Gaussian random variable with zero mean and variance σ_A^2. Find the density functions of $X(0)$ and $X(1)$. Is $X(t)$ stationary?

7. a) Explain about auto and cross correlation function properties.
b) Explain about Poisson random process.

8. A random process is given by $X(t) = A\cos(\Omega t + \theta)$ where A is a real constant, Ω is a random variable with density function $f_{\Omega}(\Omega)$ and θ is a random variable uniformly distributed over the interval $(0,2\pi)$ independent of Ω. Show that the power spectrum of X*(t)* is

$S_{xx}(\omega) = \frac{\pi A^2}{2}\left[f_{\Omega}(\omega) + f_{\Omega}(-\omega)\right]$ and also find P_{YY}.

CODE No.:10BT30403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

SIGNALS AND SYSTEMS

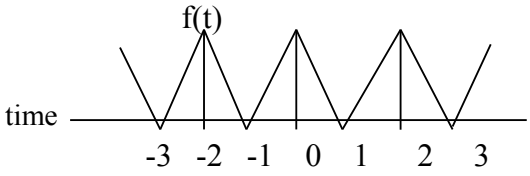
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write short notes on Orthogonal functions
b) Define the following Elementary signals
i) Real Exponential Signal
ii) Continuous time version of a sinusoidal signal
c) Bring out the relation between Sinusoidal and complex exponential signals.

2. Find the exponential Fourier series and plot the magnitude and phase spectrum for the triangular waveform shown in figure.



3. Obtain the Fourier transform of the following functions:
i) Impulse train ii) DC Signal iii) Cos $\omega_0 t$ iv) Gaussian Pulse

4. a) What is Poly-Wiener criteria and what you do for distortion less transmission?
b) Find the relation between bandwidth and rise time for High Pass Filter.

5. a) Explain how periodic signals in presence of noise are detected using correlation.
b) State and prove Parseval's theorem.

6. a) State and Explain ROC Property of Laplace Transform if x(t) is two sided
b) Find Laplace Transform of the signal $x(t) = e^{-b|t|}$.

7. a) State and prove the time differentiation and frequency integration property of Laplace transforms.
b) Find the inverse transform for the function $F(s) = \dfrac{1}{s^2(s-10)(s-3)}$ using partial fraction.

8. a) Find the Z-transform of $\mathbf{x[n] = (1/2)^n u[n] + (1/3)^n u[-n-1]}$.
b) A finite sequence x[n] is defined as x[n] = {5,3,-2,0,4,-3} Find X[Z] and its ROC.

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CODE No.:10BT30421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

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) What is breakdown in diodes? Explain Avalanche and Zener break down mechanisms.
b) Calculate the forward and reverse resistance of p-n diode when applied voltage is 0.25 V for Ge-diode. I_O = 1 μA at T= 300°K.

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 the Input and Output characteristics of common base configuration.
b) Derive expression $\mathbf{I_C = \beta I_\beta + (\beta+1) I_{CO}}$ from fundamentals.

4. a) A NPN transistor is used in self-biasing (voltage-divider bias) arrangement. The circuit components are V_{CC} = 4.5V, R_C = 1.5 KΩ, R_E = 0.27 KΩ, R_1= 27 KΩ, R_2 = 4.5 KΩ, β = 50. Determine stability factor and operating point (V_{CE}, I_C).
b) Discuss the diode bias compensation against V_{BE} variations.

5. a) Draw the ***h***-parameter equivalent model of transistor CB-configuration.
b) For a transistor amplifier the h-parameters are h_{ie} = 1.1 KΩ, $h_{re} = 2.5 \times 10^{-4}$, h_{fe} = 50, h_{oe} = 25 A/V. Determine A_I, A_V, R_i, R_o, A_{vs} if $R_S = R_L$ = 10 KΩ

6. a) Draw the JFET diagram and explain the operation.
b) For small signal FET model show that $\mu = g_m r_d$.

7. a) Discuss the concepts of sampling and mixing in amplifier circuits.
b) Explain the classification of oscillators.

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) Regular/Supplementary Examinations November - 2014

DIGITAL LOGIC DESIGN

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Convert the following into Decimal number system
   i) $(12121)_3$
   ii) $(4310)_5$
   iii) $(50)_7$
   iv) $(198)_{12}$
   b) What is meant by weighted code? Give an example for weighted code and non-weighted code.

2. a) Implement the functions of all logic gates using only NOR gate.
   b) Prove the following using Boolean Algebra.
   i) **Y'Z'+W'X'Z'+W'XYZ'+WYZ'=Z'**
   ii) **AB + ABC + A'B+AB'C = B+AC**

3. Using K-Map determine the minima sum of product expression and realize the simplified expression using only NAND gates.
f(w,x,y,z) = $\sum$**m(0,2,3,7,8,9,10)**.

4. a) Draw and explain the operation of binary adder and subtractor circuit.
   b) Explain the operation of an encoder and write its HDL code.

5. a) Explain the operation R-S master slave flip flop. Explain its truth table.
   b) Explain about the realization of SR flip-flop, JK flip-flop using D flip-flop.

6. a) Draw and explain 4-bit universal shift register.
   b) Explain the differences between asynchronous and synchronous counters.
   Design a MOD-6 ripple counter.

7. A combinational circuit is defined by the functions
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 having 3 - inputs, four product terms and two outputs.

8. a) Explain the problems in asynchronous circuits.
   b) Explain the methods to eliminate static hazards in asynchronous circuits.

CODE No.:10BT30501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

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) What is the first order predicate calculus statement equivalent to the following?
"*Every IAS officer is a graduate*".

b) If the universe of discourse is the set {a,b,c} eliminate the quantities in the formula:
(x) R(x) Λ (x) S(x).

3. a) Suppose R and S are symmetric and reflexive relations on a set A. Is R ∩ S symmetric and reflexive. Justify your answer.

b) Show that the "greater than or equal" relation is a partial ordering on set of integers.

4. a) If a ,b are any two elements of a group (G ,0) which commute show that
i. a^{-1} and b commute
ii. b^{-1} and a commute and
iii. a^{-1} and b^{-1} commute.

b) Let g be a homomorphism from a group $\langle G,* \rangle$ to a group $\langle H,\Delta \rangle$, and let k be the kernel of g and $H' \subseteq H$ be the image set of g in H. Then G/K is isomorphic to H'.

5. a) Use mathematical induction to prove the inequality $n < 2^n$ for all positive integers n.

b) How many ways are there to distribute 10 different books among 15 people if no person is to receive more than 1 book.

6. a) Solve the recurrence relation $\mathbf{a_n - 7\ a_{n-1} + 16\ a_{n-2} - 12\ a_{n-3} = 0}$ for $n \geq 3$ with $\mathbf{a_0 = 1, a_1 = 4, a_2 = 8}$.

b) Find a generating function for the relation $\mathbf{a_{n+1} - a_n = 3^n}$ for $n \geq 0$ with $\mathbf{a_0} = 1$.

7. a) Show that a simple digraph is strongly connected **iff** there is a cycle in G which includes each node at least once and no isolate node.

b) Explain graph coloring problem with an example.

8. a) What is minimum spanning tree? Distinguish between Krushkal's and Prim's algorithms.

b) Distinguish between DFS and BFS.

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CODE No.:10BT30502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

DATA STRUCTURES

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

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

Answer any FIVE questions
All questions carry equal marks

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

2. Define or briefly describe about each of the following with a suitable illustration.
(i) Singly linked list, (ii) doubly linked list, (iii) circularly linked list, and (iv) multi linked list.

3. a) Define Maximum Heap and write C code to implement all operations of Max Heap.
b) Show that height of max heap is log n for any heap having 'n' elements.

4. a) Construct Binary tree by using the below information

Preorder : A B D J K E C F H I G L
Inorder : J K D B E A H I F C G L

b) Explain about binary search tree? Construct binary search tree for the following elements

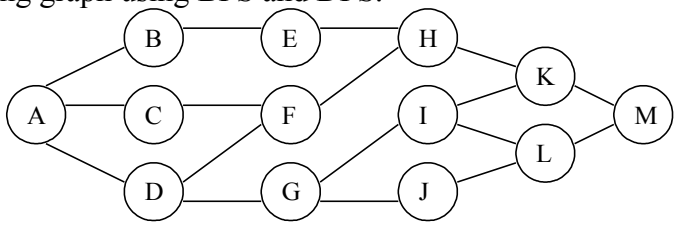
20 15 35 40 2 10 30 19

Delete element 15 from the constructed tree and give the tree after deletion of 15 from the tree.

5. Describe about various cases that arise while inserting a new node in to an AVL tree with illustrations.

6. Insert the following keys one by one and show the resulting B-Tree of order 3. Keys are: 1, 2, 3, 4, 5, 6, 10, 13, 11, 12, 9, 8, 7, 15, 14. Your diagrams should be clear showing which operation (like splitting a node.) is done at which node to restore the B Tree properties after each insertion.

7. a) Explain about the graph and its properties. Give the ADT for a graph.
b) Traverse the following graph using BFS and DFS.



8. Explain the following
a) Sequential File Organization
b) Indexed Sequential File Organization
c) Direct File Organization

CODE No.:10BT31001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

THERMODYNAMICS AND FLUID MECHANICS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

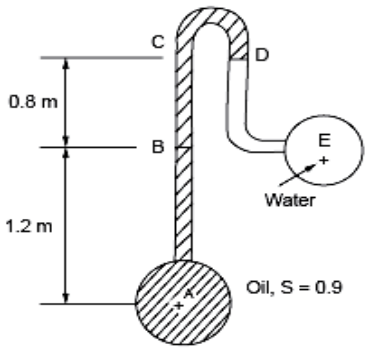
1. a) What is thermodynamic equilibrium? Explain the significance of quasi-static process.
b) State Avogadro's hypothesis and prove that the product of gas constant and molecular mass has the same value for all gases.
c) A perfect gas has a molar mass of 44kg/kg mole and specific heat at constant pressure, C_p = 0.846kJ/kg.K. Find the specific heat at constant volume and value of adiabatic index. If a vessel of 0.2m^3 contains this gas at 2 bar and 180°C and is then cooled until the pressure falls to 1.013 **bar**, calculate the heat rejected.

2. a) Compare and contrast between any two thermodynamic air cycles.
b) Describe the working principle of Joule cycle.

3. a) Explain with a neat sketch about simple Rankine cycle mentioning its applications.
b) Explain the working principle of any one type of boiler accessories.

4. a) What is COP?
b) Define i) Ton of refrigeration ii) Refrigeration effect
c) Enumerate the three modes by which heat can be transferred from one place to another. Which is the slowest of all?

5. a) Explain Classification of Manometers and what is Piezometers?
b) An inverted U - tube manometer is fitted between two pipes are shown in the figure below. Determine the pressure at E if P_A = 0.4 **bar** (gauge).



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

7. State Buckingham's π theorem. Why this theorem is considered superior over the Rayleigh's method for dimensional analysis.

8. a) Distinguish between dynamics and positive displacement pumps with neat sketches.
b) What are the types of castings used in centrifugal pumps?

CODE No.:10BT32303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2014

MICRO BIOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Write short notes on
(a) Edward Jenner.
(b) Robert Koch.
(c) Anton Van Leeuwenhoek.
(d) Theory of spontaneous generation.

2. Discuss the classification and nomenclature of **Eubacteria** and **Archae** bacteria.

3. Describe the nutritional classification of Microbes.

4. Write a note on the following:
a) Colony characteristics
b) Sugar fermentation test
c) Gram's staining
d) Pure culture methods

5. What are the microbial preservatives and describe the spore preservation technique.

6. What is pathogenesis? Describe the steps involved in the infection of Tuberculosis.

7. Discuss about Hepatitis B Virus with special reference to vaccine development.

8. Describe the techniques employed for the assay of plant, animal and prokaryotic viruses.

CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

SWITCHING THEORY AND LOGIC DESIGN

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Convert the following:
   i) $(F3A7C2)_{16}$ to Binary and Octal
   ii) $(4310)_5$ to Decimal
   iii) $(1938.257)_{10}$ to Hexadecimal
   b) Perform the following operations without converting to decimal and using 2's complement representation
   i) $(7568)_8 - (8567)_8$
   ii) $(11110110)_2 - (01111110)_2$

2. a) Implement the following logical expression using AND-OR-INVERTER gates and also using only NOR gates. **A + BC'(D' + BE')**.
   b) Prove the following using Boolean algebra:
   i) **y'z' + w'x'z' + w'xyz' + wyz' = z'**
   ii) **ABC + A'B'C + A'BC +ABC' + A'B'C' = A'B' + B(A + C)**.

3. Implement the following logical expression using only universal gates of NAND and NOR
   i) **ABC + AB'C +A'BC + A'B'C**
   ii) **f(A,B,C,D) = Σ m (0, 2,3,6,8,9,14,15)**.

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

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

6. a) Design a four bit binary synchronous counter with D-flipflops.
   b) Derive the characteristic equation of T-flipflop.

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.:10BT41001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2014

ELECTRICAL AND ELECTRONIC MEASUREMENTS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) A Moving Ammeter has a fixed shunt of 0.02Ω With a coil resistance of R=1k Ω and a potential difference of 500mV across it full scale deflection is obtained:
   i) To what shunted current does it corresponds.
   ii) Calculate the value of 'R' to give full scale deflection when shunted current ' I' is 20 amp.
b) Briefly explain the different operating forces.

2. a) What are the types of Ohm meters and explain Crossed coil moving magnet Ohm meter?
b) The four arms of a bridge circuit have the following resistances: AB = 700 ohms, BC = 735 ohms, CD= 735 ohms and DA = 700 ohms. A galvanometer is connected across BD and it given a center zero **200-0-200** μA movement having an internal resistance of 125 ohms. A battery of **emf** 10 V and negligible resistance is connected across AC. Find the current flowing through the galvanometer by approximation method.

3. a) Explain the sources of errors in single phase induction type energy meter.
b) Describe the construction and working of single phase power factor meter.

4. a) Explain the working principle of Schering bridge and derive an expression for measurement of unknown capacitor.
b) Explain Wagnar ground connection and show that it minimizes the stray capacitance effects in bridge circuit

5. a) Explain the principle of a successive approximation type DVMs.
b) Explain the principle of operation of true RMS reading Voltmeter.

6. a) Explain the different modes of operations of Frequency, Time, time Period, Average time Period.
b) Explain with the help of functional block diagram, explain the working of heterodyne wave analyzer.

7. a) What are the various applications of CRO?
b) What are the Lissajous figures? Explain how phase and frequency can be measured using these figures.

8. a) What is spectrum analyser? Explain the working principle of basic spectrum analyser.
b) With neat sketch explain the operation of strip chart recorder.

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

PROBABILITY AND STATISTICS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove the addition theorem for three events A, B and C.
b) Obtain the sample space of events when two dice are thrown simultaneously. In how many cases do you get the total as an odd number?

2. a) The chance of getting a misprint in a page of a book is $\mathbf{e^{-4}}$. Find the probability that a page contains more than 2 misprints.
b) Plot the following data as a scatter diagram and comment on the nature of the correlation.

X	12	13	14	15	16	17	18
Y	28	25	22	21	22	20	10

3. a) Explain the terms:
i) Scatter diagram and
ii) Pearson's Correlation Coefficient with suitable examples.
b) Calculate the correlation coefficient between X and Y from the following data.

X	2	3	4	5	6	7	8	9
Y	5	7	8	11	12	15	16	19

4. a) A population consists of six numbers 4,8,12,16,20,54 consider all samples of size two which can be drawn without replacement from this population. Find;
i) the population mean
ii) the population standard deviation
iii) the mean of the sampling distribution of means
iv) the standard deviation of the sampling distribution of means.
b) A sample of size 65 is taken from a population whose standard deviation is 12. Find the standard error of sampling distribution of means.

5. a) In a sample of 1000 persons in Delhi, 540 were found to eat rice as food while others eat wheat. Test the hypothesis that both rice and wheat are popular in Delhi. (use $\boldsymbol{\alpha = 0.05}$)
b) The means of two random samples of sizes 1000 and 2000 are 67**.**5 and 68**.**0 respectively. Test whether these two samples have come from the same population with standard deviation 2**.**5.

6. a) A random sample of six steel beams has a mean compressive strength of 58,392 p.s.i (pounds per square inch) with a standard deviation of 648 p.s.i. Use this information and the level of significance α **= 0.05** to test whether the true average compressive strength of the steel from which this sample came is 58,000 p.s.i. Assume normality.
b) The nicotine contents in milligrams in two samples of tobacco were found to be as follows.

Sample A	24	27	26	21	25	---
Sample B	27	30	28	31	22	36

Can it be said that two samples came from same normal population.

7. a) Explain clearly the construction and function of (i) X - chart and (ii) C - chart.

b) A manufacturer of transistors found the following number of defectives in 25 sub-groups of 50 transistors.

3, 5, 4, 2, 3, 2, 7, 0, 2, 4, 2, 3, 4,
1, 2, 4, 8, 2, 4, 2, 6, 4, 3, 1, 4,

Construct a control chart for the fraction defective, plot the sample data on the chart and comment on the state of control.

8. a) For the **(M/M/1) : (∞/FCFS)** Queuing system, Show that the steady state probability of having **n** customers in the system is

$P_n = \rho^n(1-\rho)$. Where $\boldsymbol{\rho}$ is the traffic intensity. And $\boldsymbol{n \geq 0}$.

b) Assume that both arrival rate and service rate following Poisson distribution. The arrival rate of customers at a counter in a bank follows PD with a mean of 45/hour; service rate of the clerk follows PD with a mean of 60/hour. Find the probability of having **0, 5, 10** customers in the system. Find $\mathbf{L_s, L_q, W_s, W_q}$.

CODE No.:10BT3BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Solve $(x^2 - yz)p + (y^2 - zx)q = z^2 - xy$.

b) Solve the heat equation $\frac{\partial u}{\partial t} = \frac{\partial^2 u}{\partial x^2}$, with boundary conditions $u(x, 0) = 3\sin n\pi x, u(0, t) = 0$ and $u(1, t) = 0$, where $0 < x < 1, t > 0$.

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) State and prove the necessary condition for the complex function **f(z) = u + i v** to be analytic.

b) An electrostatic field in the **xy** plane is given by the potential function **Φ(x,y) = 3x^{2}y - y^3**, then find the stream function.

4. a) Prove that $w = \frac{1 + iz}{i + z}$ where *C* is $w = \frac{z}{z + 1}$.

b) If $\int_C \frac{e^z}{\cos \pi z} dz$, where *C* is the ellipse $\left(\frac{x}{2}\right)^2 + \left(\frac{y}{3}\right)^2 = 1$, find the value of $F(3.5)$, $F(i), F'(-1)$ and $F''(-i)$.

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

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

6. a) Evaluate $w = \frac{z}{z + 1}$, where *C* is the circle **| z | = 2**.

b) Evaluate $\int_C \frac{e^z}{\cos \pi z} dz$, where *C* is the unit circle **| z | = 1.**

7. a) State and prove Rouche's theorem.

b) A Bilinear transformation preserves cross ratio of four points.

8. a) Prove that $w = \frac{1 + iz}{i + z}$ maps the part of the real axis between **z = 1** and **z = -**1 on the semi-circle in *w*-plane.

b) Find the image of the circle **| z – 2| = 3** under the bilinear transformation $w = \frac{z}{z + 1}$.

CODE No.:10BT3BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

MATRICES AND NUMERICAL METHODS

[Civil Engineering, Mechanical Engineering, Bio-Technology]

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) Find the Eigen values and Eigen Vectors of the matrix $A = \begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$

b) Find the Characteristic Equation of the matrix $A = \begin{bmatrix} 1 & 3 & 7 \\ 4 & 2 & 3 \\ 1 & 2 & 1 \end{bmatrix}$. Show that the equation is satisfied by A.

3. a) By using the bisection method, find an approximate root of the equation **x – cosx = 0** that lies between **x = 0** and **x = 1**. Carry out the computations up to the 7th stage.

b) Fit a second degree parabola to the following data

X	0	1	2	3	4
y	1	1.8	1.3	2.5	6.3

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

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

b) Using Lagrange's formula find f(9) from the following data

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

5. a) The population of a certain town (as obtained from census data) is shown in the following table:

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

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

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

6. Using Runge - Kutta 4th order method, find y(0.2), y(0.4) and y(0.6), given that $y' = y - \frac{2x}{y}$, ***y*(0)=1**, by taking ***h* = 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)=6 e^{-3x}**.

8. a) Find the Fourier series expansion for f(x), if $f(x) = -\pi, -\pi < x, < 0$
$= -x, 0 < x < \pi$

b) Find the half-range sine series for the function $f(x) = x - x^2, 0, < x < 1.$

CODE No.:10BT30101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

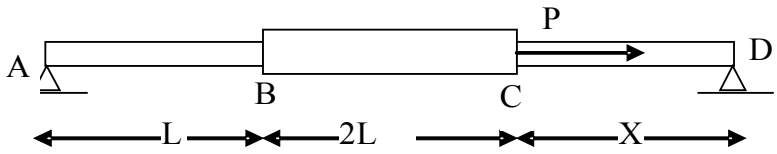
MECHANICS OF SOLIDS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive relationship between E and N.
b) Calculate the length of the CD (X) component in the compound bars shown in Fig. 1, so that the total deformation of the member is zero? Take $E_{AB} = E_{CD} = 210GPa$ and $E_{BC} = 105GPa$. $A_{AB} = A_{CD} = A$ and $A_{BC}=2A$. Also find the stress in the different parts of the member.



2. Draw the shear force and bending moment diagrams for a beam supported and loaded as shown in Fig.2

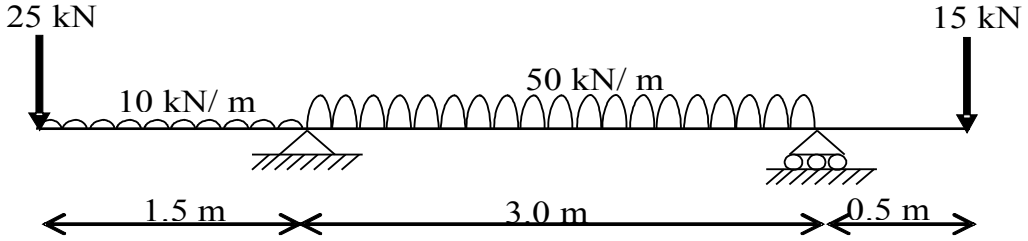


Fig. 2

3. a) A rectangular beam section 300 mm x 600 mm, is subjected to a sagging moment producing a max bending stress of 9 Mpa Find:
(i) Total force in compressive zone. (ii) Moment of this force about N.A.
b) For a rectangular section of B x D mm, determine formula of shear stress at a distance "a" from neutral axis at a section of a beam where shearing force is "F". Hence find the ratio of $\mathbf{q_{max}/q_{ave}}$..

4. A square footing 1.75 m x 1.75m supports a vertical point of 200KN located at the quarter point of one diagonal. Neglect the self weight of the footing. Calculate the normal stresses at the four outside corners on a horizontal section of the footing. Also find the position of neutral axis.

5. 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/m m^2. The solid length of the spring is 45mm. Find the wire diameter, mean coil radius and number of coils. Take G = 40,000N/m m^2

7. The internal and external diameters of a thick hollow cylinder are 8 cm and 12 cm respectively. It is subjected to an external pressure of 40Mpa and an internal pressure of 120Mpa. Calculated the circumferential stress at the external and internal surfaces and determine the radial and circumferential stresses at the mean radius. Take E = 200Gpa and $\mu = 0.25$.

8. Design a steel thick cylinder of internal diameter 1.25 m subjected to an internal pressure of $12 N/mm^2$. The maximum hoop stress in the section is not to exceed $40 N/mm^2$.

CODE No.:10BT30102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

BUILDING MATERIALS AND CONCRETE TECHNOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define quarrying and explain various methods of quarrying.
b) Explain the composition of good brick earth.

2. a) Describe the constituents of limestone.
b) Explain the manufacturing process of OPC.

3. a) Describe the defects in timber.
b) Explain the various ingredients of a varnish.

4. a) Describe the various processes adopted to manufacture of steel.
b) Describe the various treatments given to glass.

5. a) Explain the various ingredients of cement concrete and their importance.
b) Explain the effect of time and temperature on workability.

6. a) Explain the various tests to be conducted on hardened concrete.
b) Describe the importance of curing of cement concrete and explain various methods of curing.

7. a) Explain the various types of shrinkage of concrete.
b) Design M 25 grade of concrete with medium workability using the following data:
Maximum size of aggregate: 20 mm
Specific gravity of cement: 3.15
Specific gravity of coarse aggregate: 2.60
Specific gravity of fine aggregate (Zone I): 2.65
Adopt IS code method.

8. a) Explain the following:
i) Fiber Reinforced Concrete.
ii) Self Consolidating Concrete.
b) Describe the application of HPC.

CODE No.:10BT30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

BASICS OF ELECTRICAL AND MECHANICAL TECHNOLOGY

[Civil Engineering]

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

(Minimum of two questions from each part should be chosen for answering five questions)
All questions carry equal marks

PART - A

1. a) Define: electric current, potential difference.
b) State Ohm's law and explain how is it applied in dc and ac circuits.
c) Obtain an expression for delta-to star transformation when each arm in delta had same resistance.

2. a) Draw a neat sketch of 3-point starter and explain its operation.
b) Explain different types of losses in DC Machines.

3. a) Derive the condition for maximum voltage regulation of single phase transformer.
b) The no load current of a transformer is 5.0 A at 0.3 power factor lag when supplied at 230 V, 50Hz supply. The number of turn on the primary winding is 200. Calculate:
i) maximum value of flux in the core.
ii) core loss.
iii) magnetizing current.

4. Define voltage regulation of an alternator. Explain synchronous impedance method of determining regulation of an alternator.

PART - B

5. a) Describe TIG welding process in detail and compare TIG and MIG welding.
b) Compare brazing and soldering and welding.

6. a) What is internal combustion engine? Briefly explain the functions of its main components.
b) Why lubrication is necessary for I.C engines? And explain any one method of lubrication used in I.C. Engines.

7. a) Explain vapour compression refrigeration system with a neat sketch.
b) What are its major advantages over air refrigeration system?

8. a) Write any seven applications of compressed air.
b) Write short notes on Bull dozers.

CODE No.:10BT30104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

SURVEYING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Sketch and describe a line ranger. How it is used in the field?
b) What are different tape corrections and how are they applied?

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

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

Compute the interior angles and correct them for observational errors.

3. The following consecutive readings were taken with a dumpy level and 5 m leveling staff on continuously sloping ground at a common interval of 20 m.

0.385, 1.030, 1.925, 2.825, 3.730, 4.685, 0.625, 2.005, 3.110, 4.485 m.

The reduced level of the first point was 208.125 m. Rule out a page of a level field book and enter the above readings. Calculate the reduced levels at the points by rise and fall method. Also find the gradient of the line joining the first and the last point.

4. a) Explain the method of computation of volumes from spot levels.
b) A cutting is to be made in ground which has a transverse slope of 1 in 6. The width of formation is 10 m and the side slopes are 2 to 1. If the depths at the center lines of 3 sections 20 m apart are 3, 4 and 5 respectively, determine the volume by Trapezoidal rule.

5. a) Explain the procedure to measure a horizontal angle by repetition method using a theodolite.
b) Explain the procedure of traversing by direct method without transiting using fast needle method.

6. a) Explain the object of providing an anallatic lens in a tacheometer
b) A tacheometer is set up at intermediate point on a traverse curve AB and the following readings were taken on a vertically held staff.

Staff station	Bearing	Vertical angle	Intercept	Axial line reading	Remarks
A	$40^0\ 36'$	$-\ 5^0\ 24'$	2.184	1.960	RL of A = 360.65 m
B	$220^0\ 18'$	$-\ 6^0\ 12'$	1.980	1.856	

If the instrument is fitted with anallatic lens and multiplying constant as 100. Calculate the length of AB and RL of B.

7. A simple circular curve is to be set out by the following methods:

i) Offsets from chords produced
ii) Two theodolite method

The data for this curve is as follows:

Radius of the curve = 550 m
Angle of deflection = 45°
Chainage of the point of intersection = 1785.5 m
Calculate the necessary data for setting out the curve considering a peg interval of 20 m.

8. a) Describe the basic principle of Electronic distance measurement and explain how to compute the distance from the phase differences.
b) Explain about global positioning system.

CODE No.:10BT30105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

FLUID MECHANICS-I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) The space between two large flat and parallel walls, 25 mm apart is filled with a liquid of viscosity 0.7 Pa.s. Within this space a thin flat plate, 250 mm × 250 mm is towed at a velocity of 15 cm/s at a distance 6 mm from one wall, the plate and the movement parallel to the walls. Assuming linear variation of velocity between the plate and the walls, determine the force exerted by the liquid on the plate.

b) Explain the working of a simple differential U-tube manometer.

2. a) Show that the centre of pressure always lies below the centre of gravity in the case of a lamina immersed in a liquid, the lamina being oriented in any fashion other than horizontal.

b) Convert a pressure head of 100 m of water to i) kerosene of specific gravity 0.81 and ii) carbontetra chloride of specific gravity of 1.6.

3. a) In a converging section of a pipe the velocity at a given section is 1.50 m/s, where the diameter is 1.0 m. In a length of 2.0 m, its diameter is reduced to 0.50 m. Determine the convective tangential acceleration at two sections.

b) Does a velocity potential function $\emptyset = 2(x^2 + 2y - y^2)$ describe the possible flow of an incompressible fluid? If so, find out the equations for the velocity vector and streamlines.

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) Explain the terms Hydraulic gradient and Total energy lines.

b) Three pipes of diameters 300 mm, 200 mm and 400 mm and lengths 300 m, 170 m and 210 m respectively are connected in series. The difference in water surface levels in two tanks is 12 m. Determine the rate of flow if co-efficient s of frictions are 0.005, 0.0052 and 0.0048 respectively, considering : i) Minor losses and ii) Neglecting minor losses.

6. Define an orifice meter. How is it different from a venturimeter? Prove that the discharge through an orifice meter is proportional to square root of head causing flow.

7. a) An oil of relative density 0.92 and viscosity 0.9 poise flows through a 10 cm diameter pipe 30 m long. Determine the largest flow that can be passed through this pipe while maintaining laminar flow. What is the head loss between the two ends of the pipe under this flow?

b) Distinguish between hydrodynamically smooth and rough turbulent flow.

8. a) For a rectangular notch the discharge **Q** over it depends on head **H**, width of notch **b**, density ρ, viscosity μ, acceleration due to gravity **g** and surface tension σ. Obtain a general expression for **Q**, taking ρ, **H** and **g** as repeating variables using Buckingham method.

b) A model of a submarine of scale 1/40 is tested in a wind tunnel. Find the velocity of air in the wind tunnel, if the speed of submarine in sea water is 15 m/s. Also find the ratio of resistance between the model and prototype. Take the values of kinematic and dynamic viscosities for sea water and air as 0.012 stokes and 0.016 stokes respectively. The densities of sea water and air given as 10.1 kN/m^3 and 0.0122 kN/m^3 respectively.

CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following: Newtonian and Non-Newtonian fluids, vapour pressure and compressibility.
b) A U-Tube differential gage is attached to two sections A and B in a horizontal pipe in which oil of specific gravity 0.8 is flowing. The deflection of the mercury in the gage is 60cm, the level nearer to A being the lower one. Calculate the difference of pressure between the sections A and B.

2. a) Explain the various classifications of flows and give suitable examples for each type of flow.
b) State Euler's equation of motion for a three dimensional flow and derive Bernoulli's equation from these equations, stating clearly the assumptions involved.

3. a) Explain the terms : (i) Total energy line and (ii) Hydraulic gradient line.
b) A horizontal venturimeter with inlet diameter 200 mm and throat diameter 100 mm is used to measure the rate of flow of water. The reading of the differential manometer connected to the inlet is 180mm of mercury. If the co-efficient of discharge is 0.98 determine the rate of flow.

4. a) Show that the efficiency of a free jet striking normally on a series of flat plates mounted on the periphery of a wheel never exceeds 50%.
b) A jet of water 50 mm in diameter, issues with a velocity of 10m/s and impinges on a stationary flat plate which destroys its forward motion. Find the force exerted by the jet on the plate and the work done.

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 = 28 m
Catchment area = 420 Sq.km
Rainfall = 140 cm/year
Percentage of total rainfall utilized = 68%
Penstock efficiency = 94%
Turbine efficiency = 80%
Generator efficiency = 84%
Calculate the power developed.

6. a) What are the functions of a draft tube?
b) Design a Pelton wheel for a head of 80 m and speed 300 r.p.m. The Pelton wheel develops 103 KW. Take $C_v = 0.98$, speed ratio = 0.45 and overall efficiency = 0.80.

7. a) Define and Derive the expression for specific speed of a turbine.
b) A turbine develops 9000 KW when running at 10 r.p.m. The head on the turbine is 30 m. If the head on the turbine is reduced to 18 m, determine the speed and power developed by the turbine.

8. a) What is a centrifugal pump? Derive an expression for the work done by the impeller of a centrifugal pump on the liquid.
b) A single acting reciprocating pump, running at 50 r.p.m. delivers 0.00736 m^3/s of water. The diameter of the piston is 200 mm and stroke length 300 mm. The suction and delivery heads are 3.5m and 11.5 m respectively. Determine theoretical discharge, co-efficient of discharge and percentage slip of the pump.

CODE No.:10BT30201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

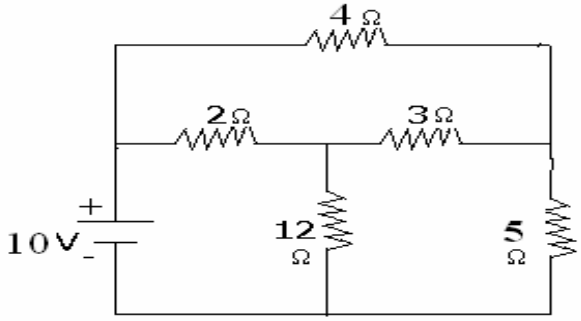
ELECTRICAL CIRCUITS

[Electrical and Electronics Engineering]

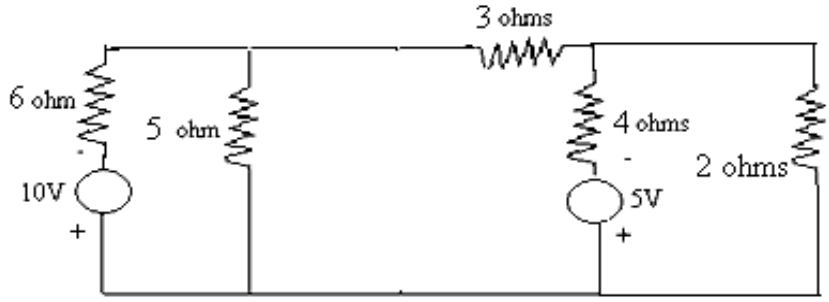
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain Active elements in detail.
b) Find the current supplied by 10 V battery by using Star - Delta transformation for the following network.

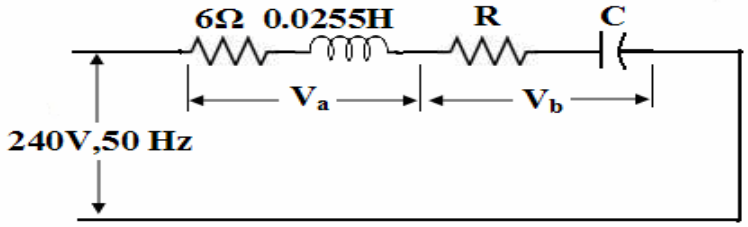


2. a) Define i) Node ii) Path iii) Loop iv) Branch
b) By using nodal analysis find the current flowing through 3 ohms resistor.



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 expression for power in a single phase a.c. circuit.
b) Find the values R and C so that $\mathbf{V_a}=3\mathbf{V_b}$, $\mathbf{V_a}$ and $\mathbf{V_b}$ are in quadrature.



5. a) Explain the power measurement by three phase circuit by using two wattmeter method with neat circuit diagram.
b) The unbalanced star connected load has balance voltages of 200V and the load impedances are $\mathbf{Z_a}$= (1+j4) ohms, $\mathbf{Z_b}$= (3-j4) ohms and $\mathbf{Z_c}$ = (6+j10) ohms. Calculate the line currents and the neutral current. Assume ACB sequence.

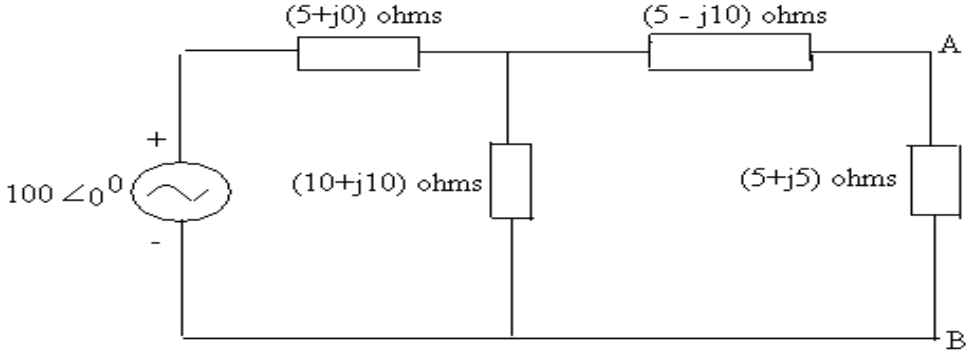
6. a) Define coefficient of coupling K and derive the relation between self inductances L_1, L_2, mutual inductance M and coefficient of coupling K.

b) A coil of 100 turns is wound uniformly over a insulator ring with a mean circumference of 2 m and a uniform sectional area of $0.025cm^2$ and $\mu_0 = 4\Pi \times 10^{-7}$. If the coil is carrying a current of 2 A,

Calculate; i) the **mmf** of the circuit ii) magnetic field intensity
iii) flux density iv) the total flux.

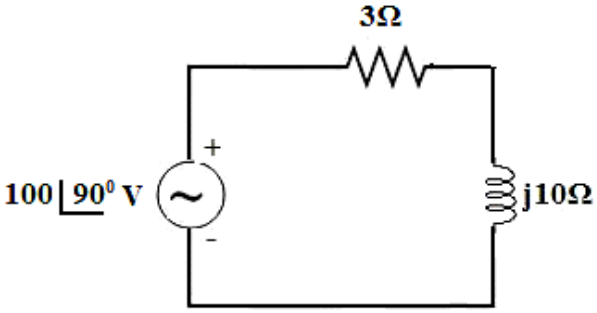
7. a) State and explain Maximum power transfer theorem.

b) By using Norton's theorem find the current flowing through (5 + j5) ohms impedance.



8. a) State and explain Reciprocity theorem.

b) In the circuit shown below, find the change in current using Compensation theorem when the j10 Ω reactance is changed to j5 Ω.



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CODE No.:10BT30202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

DC MACHINES

[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 energy stored in a magnetic field.
b) The self and mutual inductances of two coupled coils are $L_1 = 4 + 1/x$; $L_2 = 2 + 1/x$; and $M_{12} = M_{21} = 1/x$, Where 'x' is a certain linear displacement. For constant currents of $I_1 = 10A$ and $I_2 = -5A$ determine i) the time average force at $x = 0.5$ m ii) the mechanical work done if 'x' increases from **0.6 m** to **1.2 m**.

2. Describe the constructional details of DC machine with necessary diagrams.

3. a) Explain the process of building up of voltage in a dc shunt generator and give the conditions to be satisfied for voltage buildup.
b) The magnetization curve of **dc** shunt generator running at 1000 r.p.m. is as follows:

I_f (amps)	0	0.5	1.0	1.5	2.0
E (volts)	4	42	78	93	100

Calculate (i) The value of critical field resistance
(ii) The value of open-circuit voltage when field resistance is **60 Ω**.

4. a) Discuss the process of commutation in dc machines and how commutation is improved.
b) A 4-pole wave-wound generator has 320 armature conductors and carries an armature current of 400 A. If pole arc/pole pitch ratio is 0.68, calculate the AT/Pole for compensating winding to give uniform flux density air gap.

5. a) What are the conditions for parallel operation of **dc** generators and hence explain the procedure for paralleling **dc** generators.
b) Two 220 V, **dc** generators, each having linear external characteristics are operating in parallel. One machine has a terminal voltage of 270 V on no-load and 220 V at a load current of 35 A, while the other has a voltage of 280 V at no-load and 220 V at 50 A. Calculate the output current of each machine and the bus-bar voltage when the total load is 60 A. What is the KW output of each machine under this condition.

6. a) Explain the principle of operation of a **dc** motor and also explain the significance of back **emf**.
b) A 4-pole, 250V series motor has a wave connected armature with 1254 conductors. The flux per pole is 22 mwb when the motor is taking 50 A. Iron and friction losses amount to 1.0 KW. Armature resistance is 0.2 **Ω** and series field resistance is 0.2 **Ω**. Calculate
i) the speed ii) the shaft torque iii) the efficiency

7. a) What are the factors that affect the speed of a **dc** motor? Also explain how the speed can be controlled above and below the normal speed.
b) A 220 V **dc** shunt motor takes 22 A at rated voltage and runs at 1000 r.p.m. Its field resistance is 100 **Ω** and armature circuit resistance is 0.1 Ω. Compute the value of additional resistance required in the armature circuit to reduce the speed to 800 r.p.m. when the load torque varies as the square of the speed.

8. a) Explain briefly Hopkinson's test for determining the efficiency of a **dc** machine.

b) A 200 V, 14.92 KW **dc** shunt motor when tested by Swinburne's method gave the following results:

Running light: $I_a = 6.5A, I_f = 2.5A$

With armature cocked: $I_a = 70A,$

Potential across brushes = 3 V.

Estimate efficiency of machine working as generator at full load.

CODE No.:10BT30221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

BASIC ELECTRICAL ENGINEERING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Define the following terms
   a) Charge
   b) Potential difference
   c) Electric current
   d) power
   e) Ohm's law
   f) Fuse
   g) Resistance

2. a) Explain the mesh analysis.
   b) Define the following terms
      i) Node
      ii) Branch
      iii) Path
      iv) Loop

3. A series RLC series circuit consists of R = 800 Ω , L = 80 mH and C = 8 pF. The applied voltage across the circuit is 100 V. Determine:
   i) Total Impedance across the circuit
   ii) Current flowing through the circuit and power factor of the circuit.

4. a) State the advantages of three phase system over single phase system.
   b) Three similar coils each of resistance 20Ω and an inductance of 0.5H are connected in star across a three phase supply source of 400V, 50Hz. Calculate the line current and power absorbed by the circuit.

5. a) Derive the e.m.f equation of a d.c generator.
   b) Explain the applications of various d.c. motors with valid reasons.

6. Explain the constructional details and principle of operation of three phase induction motors.

7. Explain the principle of operation of
   a) Shaded pole motor and
   b) Capacitor start single phase induction motor.

8. a) Explain about working principle of multimeters.
   b) Explain about repulsion type moving iron ammeter.

CODE No.:10BT30222

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

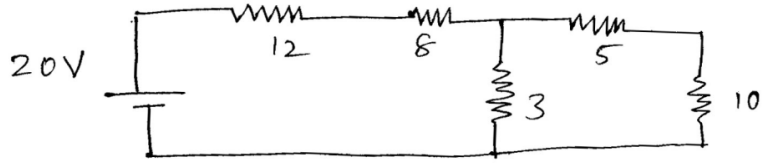
FOUNDATIONS OF ELECTRICAL ENGINEERING

[Computer Science and Systems Engineering]

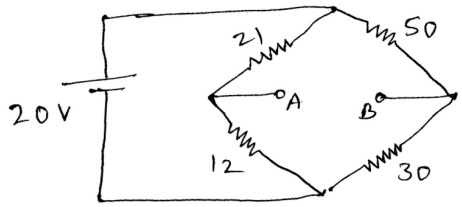
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the terms resistance, inductance, capacitance and power.
b) Determine the currents through every resister in the circuit below.



2. a) Define the maximum power transfer theorem.
b) Determine the maximum power delivered across the load terminals A and B of the network given below.



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

4. a) Explain the constructional features of DC Generator with neat diagrams.
b) Derive EMF equation of DC Generator.

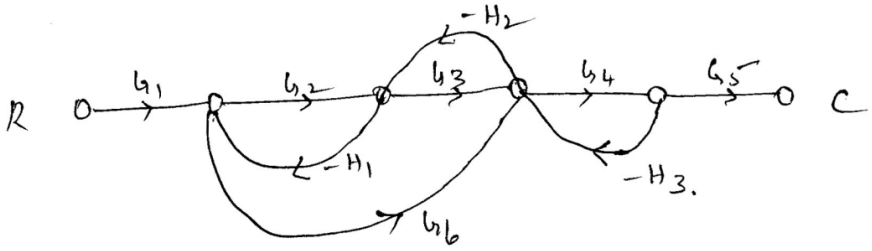
5. a) Explain different parts of transformer.
b) Explain principle of operation of three phase induction motor.

6. Explain the following with reference to the indicating instruments.
i) Deflecting Torque
ii) Controlling Torque
iii) Damping Torque
iv) Scale and Pointer

7. a) Explain open loop and closed loop control systems with examples.
b) Discuss the effect of feed back in control systems. Mentions its merits and demerits.

8. a) Write rules of block diagram reduction technique.

b) Determine the overall gain for the SFG shown below.



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

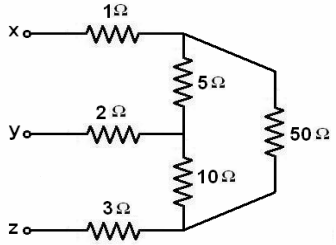
CIRCUIT THEORY

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

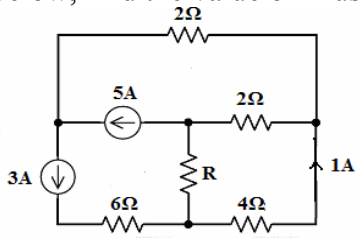
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

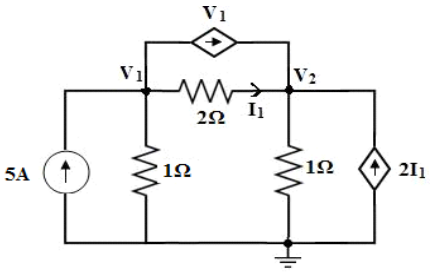
1. a) Explain Kirchoff's laws with an example.
b) Determine the voltage appearing across terminals y-z, if a d.c. voltage of 100 V is applied across x-y terminals in the figure below.



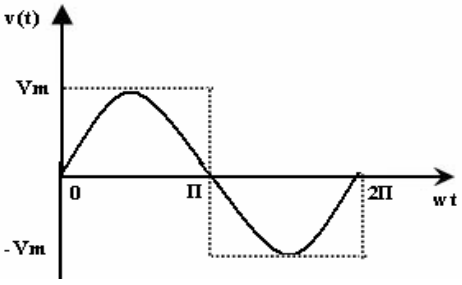
2. a) In the circuit shown below, find the value of R using mesh analysis.



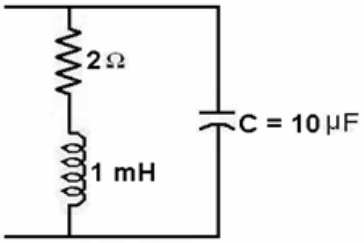
b) In the circuit shown below, find the current flowing through the 2Ω resistor using nodal analysis.



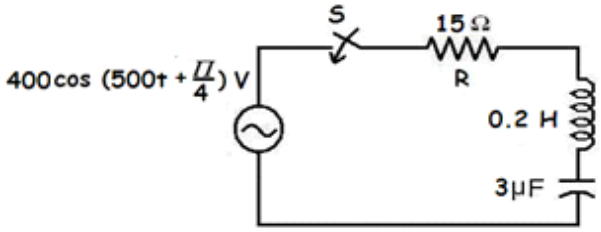
3. a) Define: Peak value, instantaneous value, average value and RMS value.
b) Find the ratio of R.M.S. values of the two voltage wave forms of equal peak value, one sinusoidal and the other rectangular in shape as shown below.



4. a) Explain Reactance, Impedance, Susceptance and Admittance.
b) In a parallel resonance circuit shown in figure find the resonance frequency and bandwidth.

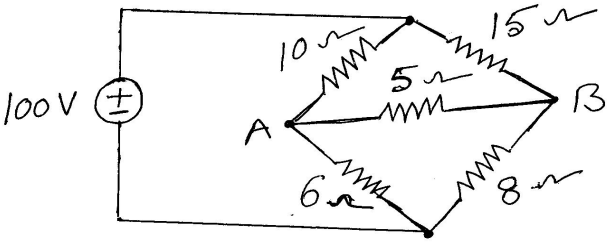


5. a) Find the expressions for **i(t)** for an R-C series circuit with sinusoidal excitation
b) In the circuit shown in figure, determine the complete solution for the current, when the switch is closed at t = 0, applied voltage is v (t) = 400 cos (500t + ∏/4). Resistance R = 15 Ω, inductance L =0.2 H and capacitance C = 3 μF.

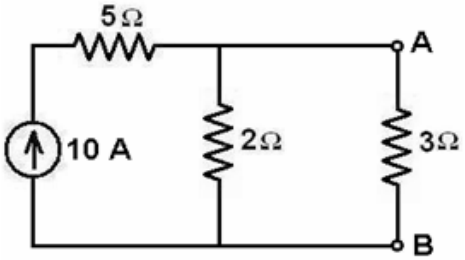


6. a) Explain Dot convention.
b) A torroid is made of steel rod of 2 cm diameter. The mean radius of torroid is 20 cm relative permeability of steel is 2000. Compute the current required to produce 1 m wb of flux and 1000 turns in the torroid.

7. a) State and explain superposition theorem
b) Use Thevinin's theorem to find the current through 5Ω resistor in below figure.



8. a) State and Explain Tellegen's Theorem.
b) Verify Reciprocity Theorem in given circuit.



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CODE No.:10BT30224

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Briefly explain about the different types of cables.
b) The capacitance values of three capacitors are 20, 40 and 60 μF. If these are placed in parallel across a 230V source, find (i) the equivalent capacitance (ii) total charge residing on the capacitors and (iii) charge on each capacitor.

2. a) Enumerate all the parts of D.C machine and indicate their functions.
b) Derive the e.m.f equation of D.C. generators.
c) Sketch the following types of D.C. generators.
i) Shunt ii) Series iii) Compound

3. a) What is meant by transformer action? Under what conditions will it take place?
b) Define the efficiency and regulation of a single-phase transformer. A 25-KVA, 2200/220V, 50 Hz transformer is tested for efficiency and regulations as follows:
O.C test (l.v side) : 220V, 4A, 150W.
S.C test (h.v side) : 90V, 10A, 350W.
Determine the equivalent circuit parameters and also regulation of transformer at 0.8 p.f. lagging and efficiency at full load and half-load at 0.8 p.f. lagging.

4. a) With neat diagram, the principle of operation of an Induction Motor.
b) Discuss the applications of three phase induction motor.

5. a) Explain the formation of depletion region in an open-circuited p-n junction with neat sketches.
b) A p-n junction diode has a reverse saturation current of 30 μA at a temperature of 125°C. At the same temperature find the dynamic resistance for 0.2V bias in forward and reverse direction.

6. a) What is the importance of crystal oscillator? Give the equivalent circuit of a quartz crystal.
b) Explain how transistor acts as an amplifier.

7. Discuss about the generation and flow detection of ultrasonics and also discuss about the applications of ultrasonics.

8. a) What is the path of an electron entering a uniform magnetic field obliquely and derive the equation for electrostatic beam in a CRT appears to emerge from a point at the centre of the electrostatic deflection system.
b) Explain, what is the function of time base voltage in a CRO?

CODE No.:10BT30301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

STRENGTH OF MATERIALS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. An aluminium solid cylinder of 7.5 cm diameter fits loosely inside a steel tube having 10 cm external diameter and 8 cm internal diameter. The steel tube is 0.02 cm longer than aluminium cylinder and is 250 cm long before the load is applied. Calculate the safe load which can be placed on a rigid flat plate on the top of the steel tube. Safe stress for steel is 95 MPa and for aluminium 65 MPa, E_s=210 GPa, E_{Al} = 70 GPa.

2. The intensity of loading on a simply supported beam of 4 m span, increases gradually from 500 N at one end to 900 N at the other end. Draw the shear force and bending moment diagrams.

3. A beam 10 cm wide and 20 cm deep is used as a simply supported over a span of 3.5m with a UDL of 20 KN/m. Find:
   i) the stress developed at the section 1m from right hand support
   ii) position and magnitude of the maximum stress developed in the beam.

4. The shear force acting on a section of a beam is 100 KN. The section of the beam is of T-shaped of dimensions 200 mm x 250 mm x 50 mm. The flange thickness and web thickness are 50 mm. Moment of inertia about the horizontal neutral axis is 1.134×10^8 mm^4. Find the shear stress at the neutral axis and at the junction of the web and the flange.

5. A shaft transmits 300 KW power at 120 r.p.m. Determine ;
   a) The necessary diameter of diameter of solid circular shaft
   b) The necessary diameter of hollow circular section, the inside diameter being 2/3 of the external diameter. The allowable shear stress is 70 N/mm^2. Taking the density of material is 77 kN/m^3; calculate the % saving in the material if hollow shaft is used.

6. A cantilever 15 cm wide and 20 cm. deep projects 1.5 m out of a wall and is carrying a point load of 20 KN at the free end. Find the slope and deflection of the cantilever at the free end using Moment Area Method. Take E = 210 GN/m^2.

7. A cylindrical shell of 650 mm internal diameter and 2.5 m long has 7 mm thickness. If the shell is subjected to an internal pressure of 1.3Mpa, find:
   a) Maximum intensity of shear stress induced.
   b) Change in dimensions of the shell. Take E = 205 Gpa and poisons ratio 0.3.

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

CODE No.:10BT30302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

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) Name Hume-Rothery's rules and explain all of them.
b) Distinguish fully between interstitial solid solutions and interstitial compounds.

3. a) Discuss the importance of phases and phase diagrams to a metallurgist.
b) What is a eutectic temperature? Explain.

4. a) Explain the microstructure, properties and applications of white cast iron.
b) What are the characteristic properties of tool and die steels?

5. Explain the following heat treatment process.
i) Annealing ii) Hardening

6. a) What are the types of glasses?
b) Describe any four applications of cermets.

7. a) Describe the crystal structure of crystalline ceramics with neat sketch.
b) What is the purpose of MgO and Al_2O_3 addition to soda lime glass?

8. Explain the following terms
i) hot pressing ii) blending iii) atomization

CODE No.:10BT30303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

THERMODYNAMICS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

2. a) Discuss the application of Zeroeth law in thermometry. What are the reference points for calibration of temperature measuring devices?
b) Write about Joules Experiments. Why PMM1 is not feasible in practice?

3. a) Show that the efficiency of a reversible heat engine operating between two given constant temperatures is maximum.
b) Calculate the amount of work input a refrigerator needs to make ice cubes at 0 **ºC** out of a tray of 0.25 kg liquid water at 10 **ºC**. Assume the refrigerator has COP of 3.5 and a motor compressor of 750 W. How much time does it take if this is the only cooling load?

4. a) What is meant by availability? Give expression for availabilities of a closed system and a steady flow open systems.
b) An adiabatic vessel contains 2 kg of water at 25 **ºC**. By paddle wheel work transfer, the temperature of water is increased to 30 **ºC**. Find the entropy change of the universe.

5. a) Draw the phase equilibrium diagram for a pure substance on i) ***T-s*** plot and ii) ***h-s*** plot, with relevant constant property lines.
b) A mass of wet steam at a temperature of 165 **ºC** is expanded at constant quality 0.8 to a pressure of 3 bar. It is then heated at constant pressure to a degree of superheat of 65 **ºC**. Find the enthalpy and entropy changes during expansion and during heating. Draw the ***T-s*** and ***h-s*** diagrams.

6. a) Derive the equation for the change in heat transfer during the polytropic process.
b) 3 kg of air kept at an absolute pressure of 100 Kpa and temperature of 300 K is compressed polytropically until the pressure and temperature become 1500 Kpa and 500 K respectively. Evaluate the polytropic exponent, the final volume, the work of compression and heat Interaction.

7. a) Explain briefly Dalton's law and Gibbs-Dalton law.
b) A mixture of hydrogen, H_2 and oxygen, O_2 is to be made so that the ratio of H_2 to O_2 is 2**:**1 by volume. If the pressure and temperature are 1.2 bar and 28 **ºC** respectively,
Calculate: i) The mass of O_2 required ii) The volume of the container.

8. a) Establish the relationship between specific humidity, relative humidity and degree of saturation, relative humidity.
b) A psychrometer reads 40 **ºC** DBT, 36 **ºC** WBT. Find the humidity ratio, relative humidity, DPT, specific volume, enthalpy of air.

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CODE No.:10BT30401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

SEMICONDUCTOR DEVICES AND CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss Zener and Avalanche break down mechanisms.
b) Calculate the factor by which the current will increase in a silicon diode operating at a forward voltage of 0.4 Volts, when the temperature is raised from 25^0C to 150^0C.

2. a) Explain why a bridge rectifier is preferred over a centre tap rectifier.
b) Explain the necessity of a bleeder resistor.
c) A diode has an internal resistance of 20Ω and 1000 Ω load from a 110Vr.m.s. source of supply Calculate: (i) the efficiency of rectification
(ii) the percentage regulation from no load to full load.

3. a) What is early effect? How does it modify the V-I characteristics of a BJT?
b) Define **α** and **β** of a transistor. Derive the relation between them.
c) Give reason for cutoff conditions for Si and Ge transistors are different.

4. a) Draw a BJT self bias circuit and obtain the expression for the stability factor 'S'.
b) A Ge transistor with V**cc** = 16V, R**c** = 1.5K, β = 50, The operating point desired is vce = 8V and I**c** = 4mA. If a stability factor S = 10 is desired, calculate values of R_1,R_2 and R_e of the circuit.

5. a) What are the advantages of h-parameter?
b) A CE amplifier has R**c** = 10K Ω, R**e** = 2k Ω, hie = 2 Ω, hfe = 60μmhos, hre = $1x10^{-4}$. Calculate **Ai** and **Av**.

6. a) Draw FET small signal model and show that $\mathbf{g_m = g_{mo}(1 - V_{GS}/V_P)}$
b) **E**xplain the JFET static and transfer characteristics with a neat sketch.

7. a) Derive the expressions for voltage gain and input admittance and output resistance of a common source amplifier.

8. Explain the principle of operation and VI characteristics of SCR. Also state few applications of SCR.

CODE No.:10BT30402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

PROBABILITY THEORY AND STOCHASTIC PROCESSES

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) A man fires 12 shots independently at a target. What is the probability that he hits the target at least once if he has probability 9/10 of hitting the target on any given shot? What is the probability that the target is hit at least twice if it is known that it is hit at least once?
b) What are the three axioms of the theory of probability? Explain by taking an event 'A' and its probability as P (A).
c) Given that two events A_1 and A_2 are statistically independent, show that A_1 is independent of $\overline{A_2}$.

2. a) Explain about Gaussian random variables.
b) The number of cars arriving at a certain bank drive in window during any 10 min period is Poisson random variable X with b = 2. Find
i) the probability that more 3 cars will arrive during any 10 min period.
ii) the probability that no cars will arrive.

3. a) State and prove properties of characteristic function of a random variable X.
b) Let X be random variable defined by the density function
$\mathbf{f_X(x) = (5/4)(1-x^4)}$ for $\mathbf{0 < x < = 1}$ and **0** elsewhere. Find E[X], $E[X^2]$ and variance.

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

5. a) Two statistically independent random variables X and Y have mean values $\overline{X} = E(X) = 2$ and $\overline{Y} = E(Y) = 4$. Thus have second moments $\overline{X^2} = E(X^2) = 8$ and $\overline{Y^2} = E(Y^2) = 25$. Find the mean values, the variance of the random variable $W = 3X - Y$.
b) Two random variables X and Y are related by the expression Y = aX + b, where a and b are any real numbers. Show that this covariance is $C_{XY} = a\sigma_X^2$ where σ_X^2 is the variance of X.

6. a) Explain about stationary random process.
b) Give the random process by X(t) = A cos(w_0t) + B sin(w_0t), where w_0 is a constant and A, B are uncorrelated zero mean random variables having different density functions but the same variance, show that X(t) is wide sense stationary but not strictly stationary.

7. a) A random process has the power density spectrum $p_{xx}(\omega) = (6\ \omega^2) / (1 + \omega^4)$. Find the average power of the process.
b) A random process X(t)= A sin (ω_ot + θ) where A and ω_o are real positive constants and θ is a random variable uniformly distributed in the interval ($-\pi$, π), is applied to the series LR network and the output is across the resistor. Find the expression for the network's response.

8. a) A random process has the power density spectrum as $Y_{XX}(w) = \frac{6w^2}{1+w^4}$. Find the average power in the process

b) Derive a relationship function between input and output power spectral densities of a linear time invariant system with the transfer function H (**ω**).

CODE No.:10BT30403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

SIGNALS AND SYSTEMS

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

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

Answer any FIVE questions
All questions carry equal marks

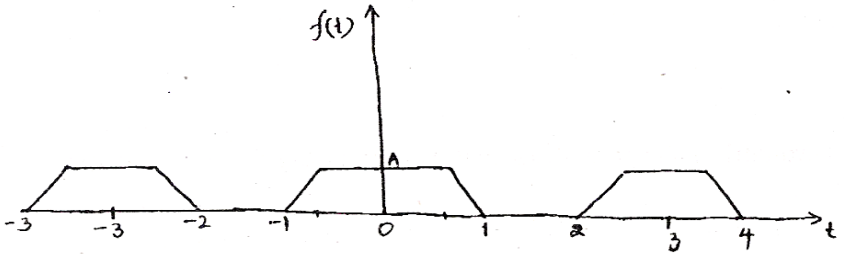
1. a) Given a signal $x(t) = t \quad 0 < t < 2$
$= 2 \quad t > 2\ t > 2$
$= 0$ elsewhere

Plot the following signals $x(2t)$, $x(-t)$, $x(t/2)$, $7x(-2t+3)$

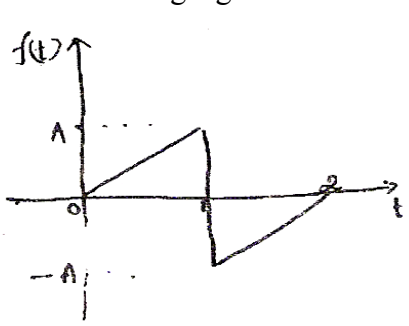
b) Evaluate the following integrals

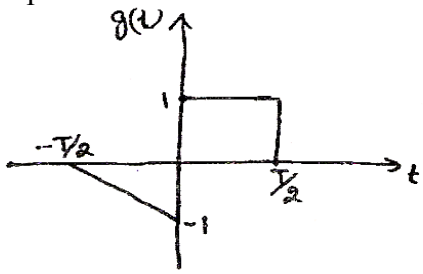
i) $\int_{-2}^{2} 2t\delta(t-1)dt$ ii) $\int_{-\alpha}^{\alpha} 2\cos t\,\delta(t)dt$ *iii)* $\int_{-2}^{2} \delta(t+3)dt$

2. a) Find the exponential Fourier series by direct evaluation of coefficients.



b) Represent the following signals in terms of step and ramp functions





3. a) Find the Fourier transform of the following

i) $\mathbf{x(t) = A \sin(2\pi f_c t)\, U(t)}$ ii) $\mathbf{x(t) = A\ rect(t/T)\cos(2\pi f_c t)}$

b) State and prove the multiplication in time domain property of Fourier transform.

4. Transfer function of a LPF is given by

H (w) = **1, |w| < w_c**
0, |w| > w_c

Show that its impulse response is non-causal.

What do you do to make it causal? What is its Physical significance?

5. a) Distinguish Energy spectral density and Power spectral density
b) Find the output power spectral density and plot it for the given signal **x(t)** to an LPF whose 3 dB frequency 1 K Hz where **x(t)** 20 cos ($6\pi \times 10^3 t + 60^o$)

6. a) If $F(s) = \frac{(s+3)}{(s+1)(s+2)^2}$, find the Inverse Laplace Transform for **-2 < Re{s} < -1**.
b) Obtain the Laplace Transform of a gate function and define ROC and with their conditions.

7. a) Write the properties of region of convergence.
b) State and prove the time shifting and time integration property of Laplace transform.

8. a) Find the Z-transform of $\mathbf{x[n] = (1/2)^n\, u[n] + (1/3)^n\, u[-n-1]}$.
b) A finite sequence **x[n]** is defined as **x[n] = { 5, 3, -2, 0, 4, -3 }** Find X[Z] and its ROC.

CODE No.:10BT30421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

ELECTRONIC DEVICES AND CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain how the depletion region is formed in PN junction diode with neat sketches.
b) Find the values of DC resistance and AC resistance of a **Ge** diode, if the temperature is 25^{o}C and I_o = 20 **μ**A and the applied voltage is 0**.**1 V.

2. a) Discuss the working of capacitor filter in rectifier circuits with relevant waveforms.
b) A half-wave rectifier is to supply power to a 1000 **Ω** load from 110 V r.m.s source supply. Calculate: i) Peak load current
ii) DC load current
iii) AC load current
iv) DC load voltage.

3. a) Explain input characteristics transistor CE configuration
b) A transistor with **α = 0.97** has a reverse saturation current of 5 **uA** in CB configuration. Calculate the value of leakage current in the CE configuration. Also find the collector current and the emitter current if the value of base current is 40 **uA**.

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. a) Give the comparison of CE, CC and CB amplifiers with respect to voltage gain current gain, input impedance and output impedance.
b) Find expressions for voltage gain, current gain, input impedance and output impedances of CC amplifier using simplified hybrid model.

6. a) Draw the structure and explain the static drain and gate characteristics of n-channel JFET.
b) What are different types of FET biasing? Explain in brief.

7. a) Discuss the different types of feedbacks used in amplifier circuits.
b) Draw the circuit of RC phase shift oscillator and explain its operation.

8. a) Explain the operation of SCR with respect to two transistors analogy.
b) Draw the diagram of UJT and explain the negative resistance.

CODE No.:10BT30422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

DIGITAL LOGIC DESIGN

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Convert the following gray numbers to equivalent binary numbers:
i) 111011
ii) 101110101
b) Determine the value of base x if $(211)_x = (152)_8$

2. a) 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) Minimize the following expressions using K-map and realize using NAND gates.
$f = \sum m(1,3,5,8,9,11,15) + d(2,13)$
b) Minimize the following expression using K-map and realize using NOR gates.
$f = \prod M(1,2,3,8,9,10,11,15) \cdot d(7,1,5)$

4. a) Describe the operations performed by the following logic circuits with an example
i) Comparator ii) Decoder iii) Encoder
b) Explain the operation of a 3-to-8 decoder 74LS138. Realize 4-to-16 decoder using two 3-to-8 decoders.

5. a) Explain about the realization of SR flip-flop, JK flip-flop using D flip-flop.
b) Explain about analysis of clocked sequential circuits in detail.

6. a) What is a shift register? Explain about the following modes of operations in a four bit shift register:
i) shift right ii) shift left iii) bidirectional.
b) Explain the differences between ring and Johnson counters. Design and explain the operation of a decade Johnson counter.

7. A combinational circuit is defined by the functions
$F_1(A,B,C) = \sum(3,5,6,7)$
$F_2(A,B,C) = \sum(0,2,4,7)$
Implement the circuit with a PLA having 3 - inputs, four product terms and two outputs.

8. a) Explain why asynchronous inputs called overriding inputs.
b) Explain the operation of RS clocked flip-flop with logic diagram.

CODE No.:10BT30501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

DISCRETE MATHEMATICAL STRUCTURES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is a tautology? Determine whether the statement $(P \wedge Q) \rightarrow (P \vee Q)$ is a tautology.
b) Obtain the principal disjunctive normal form of the formula:
$(p \rightarrow (q \wedge r)) \wedge (\sim p \rightarrow (\sim q \wedge \sim r))$

2. a) Show that $R \wedge (P \vee Q)$ is valid conclusion from the premises $P \vee Q, Q \rightarrow R, P \rightarrow M$ and $\neg M$.
b) Show that $\neg P(a,b)$ follows logically from (x) (y) (P(x, y) $\rightarrow W(x,y)$) and $\neg W(a,b)$.

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) Show that the intersection of any two congruence relations on a set is also a congruence relation.
b) Show that the composition of two congruence relations on a set is not necessarily a congruence relation.

5. a) In how many ways can be a committee of 5 can be formed from a group of 8 scientists, 6 psychologists and 4 philanthropists?
b) How many ways are there for 10 red balls, 8 green balls and 6 blue balls to be in a line so that at least 2 balls of same color must be placed side by side?

6. a) 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 $a_0 = 6$ and $a_1 = 30$.

7. a) Show that a tree with n vertices has exactly (n - 1) edges.
b) Show that K_n has a Hamilton circuit whenever $n \geq 3$.

8. a) Write briefly about the following :
i) Depth-First search tree ii) Chromatic number of a bipartite graph $k_{3,3}$
b) Describe Prim's algorithm with suitable example for finding the minimum spanning tree.

CODE No.:10BT30502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

DATA STRUCTURES

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

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

Answer any FIVE questions
All questions carry equal marks

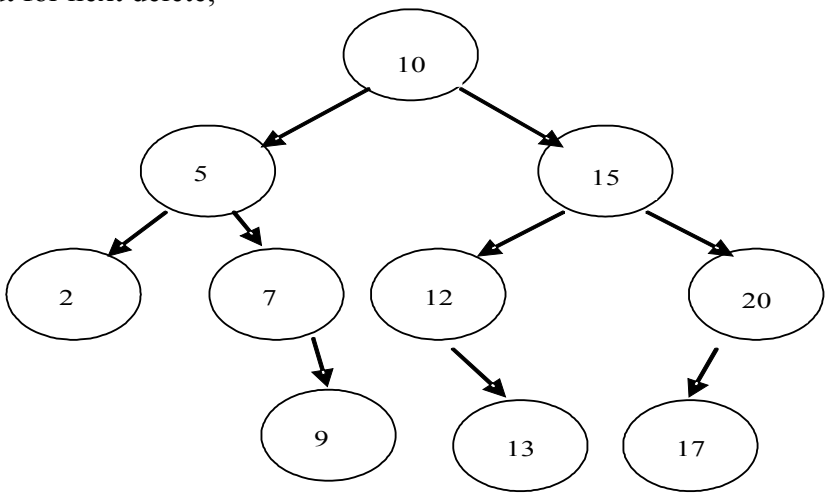
1. Write a C program for implementing merge sort algorithm to arrange elements in the ascending order. And also demonstrate the working of Merge Sort algorithm for the list of integers: 35, 1, 23, 5, 22, 28, 44, 6, 29 and 38.

2. a) Write a program to concatenate two double linked lists into a list, after concatenation three lists must exists.
b) Write a program to insert a node in the middle of a circular linked list.

3. Convert the following expression into prefix and postfix using stack
i) A + B * C / D + F
ii) A + (B * C + D) / E / F

4. ***Inorder*** traversal and ***postorder*** traversal of a binary tree are same and is: ***ABCDEFGH***. Find the binary tree and give its ***preorder*** traversal.

5. a) Give the binary tree that results when the following letters are inserted into a binary search tree: **I L O V E C P R O G R A M S**
b) Given a Binary Tree show the result of deleting 2, 5, 20, 10 after every delete the resultant tree will be the input for next delete;

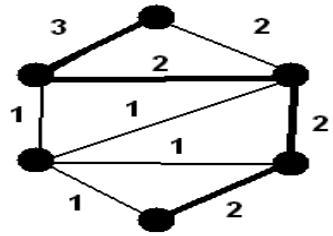


6. a) Queue can be implemented using an array and a linked list. Write C code to execute all operations of queue using both the implementations.
b) Discuss the advantages and disadvantages of these two implementations.

7. a) What is spanning tree of a graph and what minimum spanning tree of a graph?

Devise an algorithm to find out the minimum spanning of a given graph.

b) Find out the minimum spanning tree of the following graph.



8. a) What is a file? Explain file operations in detail.

b) Give the applications of Hashing.

c) Explain about heap organization.

CODE No.:10BT31001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

THERMODYNAMICS AND FLUID MECHANICS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define state, property, process, intensive and extensive properties with examples.
b) One kg of ideal gas is heated from 18 ºC to 93 ºC. Assuming R = 0.264 KJ / Kg K, γ = 1.18 for the gas, and heat transfer, 160 KJ, find (i) the specific heat (ii) the change in internal energy (iii) the change in enthalpy (iv) the work done.

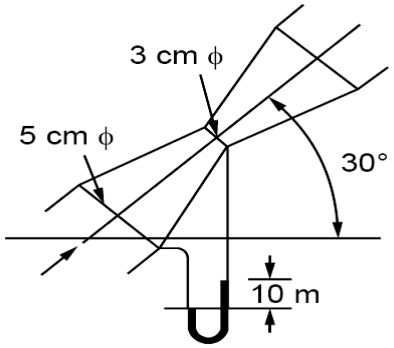
2. Explain the working principle of Rotary and positive displacement compressors.

3. a) Derive the expression for efficiency of the Rankine Cycle with neat sketches.
b) Classify Steam boilers. Discuss on Boiler mountings and accessories.

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

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

6. a) Prove that the stream function and potential function lead to orthogonality of stream lines and equipotential flow lines.
b) A venturimeter as shown in the figure below is used measure flow of petrol with a specific gravity of 0.8. The manometer reads 10cm of mercury of specific gravity 13.6. Determine the flow rate.



7. The pressure drop **ΔP** in flow through pipes per unit length is found to depend on the average velocity **u**, Diameter **D**, Density of the fluid **ρ** and viscosity **μ**. Using FLT set of dimensions evaluate the dimensionless parameters correlating this phenomenon.

8. a) Compare and contrast between pumps and turbines.
b) Briefly explain about specific speed, unit speed and head on the turbines.

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CODE No.:10BT32303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

MICRO BIOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Write short notes on:
(a) Germ theory of diseases.
(b) Louis Pasteur.
(c) Alexander Fleming.
(d) Joseph Lister.

2. Give an account of Microbial Diversity.

3. What are microbial nutrients? Describe the major nutritional types of microorganisms.

4. Write a note on the following:
a) Isolation of Fungi
b) Specialized staining techniques of Bacteria
c) Biochemical tests used for identification of Bacteria.
d) Endosperm staining

5. Explain the principle and application of Cryopreservation of microbes.

6. Write various modes of infection of microbes to the humans with suitable examples.

7. Write various applications of viruses in medical.

8. Write a note on:
i) Cultivation of animal viruses
ii) ELISA

CODE No.:10BT32304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

FLUID FLOW IN BIOPROCESSES

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Write in detail about the analogies between three transport processes.

2. a) Using only exact definitions and standards, calculate factors for converting i) newtons to pound force and ii) horsepower to kilowatts.
b) A gaseous mixture contains 20 g of N_2, 83 g of O_2 and 45 g of CO_2. Calculate the composition in mole fraction and the average molecular weight.

3. a) Define: i) Path line ii) Streak line iii) Steam line iv) Stream tube
b) Differentiate between laminar and turbulent flow.
c) Write short notes on applications of Bernoulli's equation.

4. a) Draw the plots of shear stress *Vs*. shear rate diagrams for Newtonian and Bingham fluids and explain the significance of the yield stress.
b) Differentiate between time dependent and time independent fluids with suitable examples.

5. a) An oil of viscosity 0.1 Ns/m^2 and relative density 0.9 is flowing through a circular pipe of diameter 50 mm and of length 250 m. The rate of flow of fluid through the pipe is 3.5 lit / sec. Find the pressure drop in the entire length and also the shear stress at the pipe wall.
b) Differentiate between skin friction and form friction.

6. Write short notes on the following:
a) Isentropic flow
b) Adiabatic frictional flow
c) Isothermal flow

7. Derive the Ergun equation for pressure drop in a packed bed.

8. a) Explain briefly construction of stuffing boxes and how these are different from mechanical seals.
b) A heavy oil at 20ºC having a density of 900 kg / m^3 and a viscosity of 6 cP is flowing in 4-inch steel pipe. When the flow rate is 0.0274 m^3/sec, it is desired to have a pressure drop reading across the manometer equivalent to 0.93×10^5 Pa. What size orifice should be used if the orifice coefficient is assumed as 0.61?

CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

SWITCHING THEORY AND LOGIC DESIGN

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Convert the following numbers.
   i) $(26153.7406)_8$ to binary.
   ii) $(153.513)_{10}$ to octal.
   iii) Convert $(9B2.1A)_{16}$ to decimal
   b) Using 10's complement, subtract 72532 - 3250.
   c) Convert gray number 1110 to its Binary equivalent.
   d) Determine the value of base x if $(193)_x = (623)_8$

2. a) Simplify the following Boolean expressions to a minimum number of literals.
   i) **A'C'+ABC+AC'**
   ii) **(x'y'+ z)'+z+ xy +wz**
   iii) **(A'+C) (A'+C') (A+B+C'D)**
   b) Obtain the Dual of the following Boolean expressions.
   i) **AB'C+AB'D+A'B'**
   ii) **A'B'C+ABC'+A'B'C'D**
   c) What do you mean by min terms and max terms of Boolean expressions?
   d) Prove that AND-OR network is equivalent to NAND-NAND network.

3. a) Obtain the simplified SOP and POS expressions for **F=A'B'C'+B'CD'+A'BCD'+AB'C'**
   b) Given $F = \sum(0,1,2,8,10,11,14,15)$. Simplify F using Tabulation method.

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

5. Derive the ROM programming table for the combinational circuit that squares a 4 bit number. Minimize the number of product terms.

6. a) Convert the following
   i) SR Flip-Flop to JK Flip-Flop
   ii) JK Flip-Flop to T Flip-Flop and D Flip-Flop
   b) Design and explain the operation of a serial binary adder.

7. a) With an example explain the simplification of incompletely specified machines.
   b) Explain merger chart methods.

8. a) Explain the features of ASM chart.
   b) With an example, explain about sequential binary multiplier.

CODE No.:10BT41001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

ELECTRICAL AND ELECTRONIC MEASUREMENTS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the principle of a successive approximation type DVMs
b) A PMMC movement with internal resistance, R_m = l00 nΩ and full scale current I_{fsd} = 1 mA is to be converted into a multirange DC voltmeter with voltage ranges of 0-10V, 0-50V, 0-250 V and 0-500V using a series string , design.

2. a) Explain the working principle of operation of a megger with the help of a neat diagram.
b) Explain the working principle of operation of a d.c. potentiometer and discuss the applications of d.c. Potentiometers.

3. a) Describe the construction and working of a single phase induction type energy meter.
b) Explain the construction and working of a dynamometer type wattmeter. Derive its torque equation when it is used on A.C.

4. a) The four arms of a bridge are;
Arm ab: an imperfect capacitor C1 with an equivalent series resistance of r1.
Arm bc: A non-inductive resistance R3.s
Arm cd: A non-inductive resistance R3.
Arm da: An imperfect capacitor c2 with an equivalent series resistance of r2 series with a resistance R2.
A supply of 450 HZ is given between terminals 'a' and 'c' and the detector is connected between 'b' and'd'. A t balance: R2 =4.8Ω, r3 = 2KΩ; R4 = 2.85KΩ, C2 = 0.5 μF and r2 = 0.4Ω. Calculate the values of C1, r1 and the dissipation factor of the capacitor.
b) Why can we not use conventional Wheatstone bridge for measurement of low resistance? How can we measure low resistance?

5. a) Describe the principle operation of duel slope DVM.
b) With neat diagram, explain the working principle of successive approximation DVM.

6. a) List out the difference between time and phase measurement.
b) Explain any two methods generally used to extend the frequency range of a frequency counter.

7. a) What is a Lissajous pattern and explain how from the Lissajous patterns appearing on the screen of a CRO, the phase and frequency of an unknown signal can be determined.
b) A Lissajous pattern on an oscilloscope is stationary and has 5 vertical maximum values and 4 horizontal maximum values. The frequency of the horizontal input is 1.2 kHZ. Determine the frequency of vertical input.

8. a) Briefly explain different types of spectrum analyser.
b) What are the necessities of recorders? Explain the working principle of X-Y recorders.

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CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

OPTIMIZATION TECHNIQUES

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Define optimization. Write engineering applications of Optimization.

2. Using Langrage Multipliers method,
Minimize $f(x_1, x_2, x_3) = 9 - 8x_1 - 6x_2 - 4x_3 + 2x_1^2 + 2x_2^2 + x_3^2 + 2x_1x_2 + 2x_1x_3$
$subject\ to \quad x_1 + x_2 + 2x_3 = 3$

3. Solve the following LPP by Big-M method
Minimize $\mathbf{Z} = 4x_1 + 3x_2$
Subject to constraints: $2x_1 + x_2 \geq 10$; $-3x_1 + 2x_2 \geq 6$; $x_1 + x_2 \geq 6$; $x_1, x_2 \geq 0$.

4. Describe the transportation problem. Use north -west corner rule to obtain an Initial Feasible Solution to the following transportation problem

	D	E	F	G	Supply
A	6	4	1	5	14
B	8	9	2	7	16
C	4	3	6	2	5
Demand	6	10	15	4	

5. Find the value of x in the interval (0, 1) which minimizes the function $f = x(x - 1.5)$ to within ± **0.05** by Fibonacci method.

6. What are the unconstrained minimization methods? Explain the general iteration scheme of Optimization.

7. Use Exterior penalty function method to solve
Minimize: $f(X) = x_1^2 + x_2^2$
Subject to constraints $x_1 + x_2 - 5 \geq 0$; $x_1 - x_2 \geq 0$

8. Solve the following LP problem by dynamic programming
Maximize $\mathbf{f(x_1,x_2) = 10x_1 + 8x_2}$
Subject to
$\mathbf{2x_1 + x_2 \leq 25}$
$\mathbf{3x_1 + 2x_2 \leq 45}$
$\mathbf{x_2 \leq 10}$
$\mathbf{x_1 \geq 0, x_2 \geq 0}$

❀ ❀ ❀

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

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

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

Answer any FIVE questions
All questions carry equal marks

1. What do you mean by elasticity of demand? What are various types of elasticity of demand?

2. What is Break Even Analysis? How to determine the BEP?

3. Illustrate graphically how the price and output are determined under monopolistic competition.

4. Explain the features of New Economic Policy of 1991.

5. Pass Journal entries from the following transactions in the books of Mahendra.
a) Mahendra started business with a capital of Rs. 50,000
b) Paid into bank Rs. 20,000
c) Purchased goods for cash Rs.4,000
d) Sold goods to Hari for cash Rs. 2,000
e) Purchased goods from Ram Rs. 4,000
f) Paid wages to workers Rs. 300

6. The following is the Trial balance of Ajanta & Co as on 31st December, 2012. Prepare Profit and Loss account for the year ended 31st December, 2012 and Balance sheet as on 31st December, 2012

Particulars	Debit Rs.	Credit Rs.
Stock 1.1.2012	80,000	
Insurance	800	
Purchase and Sales	1,76,000	3,24,000
Rent and Rates	1,600	
Wages	24,600	
Outstanding wages		400
Debtors and creditors	41,000	52,000
Carriage inward	3,000	
Returns	4,000	6,000
Discounts	1,200	
Printing and Stationery	2,400	
Bills receivable	6,000	
Bank overdraft		14,400
Furniture	18,800	
Cash at Bank	9,600	
Cash in hand	740	
Interest received		6,280
Plant and machinery	1,40,000	
General expenses	1,340	
Capital		1,08,000
Total	**5,11,080**	**5,11,080**

Note: Closing Stock on 31.12.2012 is Rs.41,000.

7. Explain different methods of capital budgeting.

8. Explain various fundamentals of Tally in application of accounting cycle.

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

MANAGEMENT SCIENCE

[Electronics and Communication Engineering, Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. State the principles of management as per Henri Foyal? Explain the managerial skills needed in adopting the principles.

2. What are the types of organization chart? Explain any one of them with an example.

3. The following table gives the number of defects in a casting used for making crank case of a diesel engine.

Casting No.	1	2	3	4	5	6	7	8	9	10
Number of defects (C)	15	11	25	10	12	20	15	10	17	13

Construct a C - chart with 3-sigma limits and comment on the casting process.

4. a) What are the different types of distribution channels?
b) What is stores management? Explain receipt and issue of materials in a store.

5. List different theories of HRM and explain any two of them.

6. Consider the data of a project as shown below.

Activity	Normal time (weeks)	Normal cost (Rs.)	Crash time (weeks)	Crash cost (Rs.)
1-2	13	700	9	900
1-3	5	400	4	460
1-4	7	600	4	810
2-5	12	800	11	865
3-2	6	900	4	1130
3-4	5	1000	3	1180
4-5	9	1500	6	1800

If the indirect cost per week is Rs.250, find the optimal crashed project completion time.

7. a) What are the factors that promote entrepreneurship?
b) What are the functions of an entrepreneur?

8. Define the Just-in-Time system and explain the basic concept of JIT manufacturing.

CODE No.:10BT40503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

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) Write short notes on integer and floating point numbers in programming languages. What are the problems associated with storing floating point numbers in binary?
b) What is meant by side effect? Explain with an example how operand-evaluation order interacts with functional side effects.

2. a) What are the design issues for pointer types?
b) Explain solutions to the dangling pointer problem highlighting the difference between Tombstone and Non-Tombstone methods.
c) Explain and elaborate heap management.

3. a) Consider the following C program:

```
int fun(int *i) {
*i += 5;
return 4; }
void main()
{
int x = 3;
x = x + fun(&x);
}
```

What is the value of x after the assignment statement in main, assuming
i) Operands are evaluated left to right.
ii) Operands are evaluated right to left.
b) Explain counter controlled loops. What are the design issues for counter-controlled loop statements?

4. a) Define shallow and deep binding for referencing environments of sub -programs that have been passed as parameters.
b) What are the arguments for and against a user program building additional definitions for existing operators, as can be done in C++? Such user-defined operator overloading is good or bad? Support your answer.

5. a) Define abstract data types. What are the advantages of the two parts of the definition of abstract data type?
b) Describe briefly seven design issues for object oriented languages.

6. a) What is meant by a friend function? List and explain its features.
b) List and explain the features of Object Oriented Programming languages.

7. a) Describe the features of functional programming languages.
b) Explain about database query languages.

8. a) Why goto is a bad programming construct? Explain with an example. Also discuss on the programming language constructs that can replace goto statement.
b) Considering an appropriate example, explain how problems can be solved using concurrency in Ada.

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

LINEAR AND DIGITAL IC APPLICATIONS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List the order of IC over discrete component circuit and classify ICs on the basis of application, device used and chip complexity. Explain each.
b) Design an amplifier with a gain of -10 and input resistance equal to 10**kΩ.**
c) Give two reasons why an open loop op-amp is unsuitable for linear applications.

2. a) Draw the circuit and discuss the working of an instrumentation amplifier. What are its important features? Derive an expression for its output.
b) Explain with a neat circuit diagram the working of voltage to current converter with floating load.

3. a) Draw the circuit of a Schmitt trigger using 555 timer and explain its operation.
b) Design an astable multivibrator using 555 timer for a duty cycle of 40% and a frequency of 2 KHz.

4. a) Design a CMOS transistor circuit that has the functional behavior of **f(a)=(P+Q).(Q+R)** also explain its functional operation.
b) Design a CMOS transistor circuit for 3 input AND gate with the help of function table and explain the circuit.

5. a) Give the comparison between TTL and CMOS.
b) Draw and explain the operation of AND gate using diode logic.

6. a) Write a short note on package and library.
b) Describe dataflow approach for hardware description with an example. How are the variables declared 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) Draw the logic diagram of 74 X 163 binary counter and explain its operation.
b) Design a conversion circuit to convert a T flip-flop from JK flip-flop.

CODE No.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

PRINCIPLES OF COMMUNICATIONS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove duality and frequency shifting properties of Fourier transform.
b) Find convolution of two continuous time functions.
x(t) = 3cos2t for all t

$$y(t) = \begin{cases} e^{t} & t < 0 \\ e^{-t} & t \geq 0 \end{cases}$$

2. a) Discuss about SSB-SC signal generation using phase shift method with suitable diagram(s).
b) A carrier wave of a frequency of 20 kHz is amplitude modulated by a modulating signal $v(t) = \cos 2000\pi t + \cos 4000\pi t$. Find the expression for the corresponding SSB-SC signal.

3. a) Explain the Armstrong method for the generation of wideband FM.
b) A carrier wave of frequency 100 MHz is frequency modulated by a sinusoidal wave of amplitude 20 V and frequency 100 KHz. The frequency sensitivity of the modulator is 25 KHz per volt. Determine approximate bandwidth of FM signal.

4. a) What are the advantages of Discrete modulation?
b) Explain the methods of generation of PAM.

5. a) Derive an expression for Signal to Quantization noise ratio for PCM receiver.
b) Calculate the expression for optimum gain in DPCM.

6. a) What do you mean by coherent and non-coherent detection? Discuss them with suitable examples.
b) Sketch the binary FSK, BPSK and QPSK waveforms for the input data sequence of 11100101.

7. a) Define Information and illustrate few of its properties.
b) Consider a discrete memory less source with source alphabet = {S_o, S_1, S_2} and source statistics {**0.7, 0.15, 0.15**}
i) Calculate the entropy of the source.
ii) Calculate the entropy of second order extension of the source.

8. a) Generate a cyclic code of message length 4 and code length 7.
b) Draw Trellis diagram, Tree diagram and state diagram for the convolution code with K=2, k=2 and n=3 with generators given by (13, 15, 12).

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

DESIGN AND ANALYSIS OF ALGORITHMS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain Kruskal's Algorithm with an example.
b) Distinguish between Eulerian Graph and Hamiltonian Graph.

2. a) What is the best technique to perform String Editing? Explain why it's the best with an example.
b) State Cook's Algorithm.

3. a) Sort the following array of elements by using merge sort technique.
520, 234, 678, 123, 897, 450, 310, 285
b) Discuss Strassen's matrix multiplication in detail.

4. a) Write an algorithm to solve Job sequencing with dead lines.
b) What is the knapsack problem? Find an optimal solution to the knapsack problem with **n=3, m=20, (p1,p2,p3) = (25,24,15)** and **(w1,w2,w3) = (18,15,10).**

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 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. Find optimal tour of traveling sales person for the following cost matrix using LCBB.

The cost matrix is

$$\begin{bmatrix} \infty & 20 & 30 & 10 & 11 \\ 15 & \infty & 16 & 4 & 2 \\ 3 & 5 & \infty & 2 & 4 \\ 19 & 6 & 18 & \infty & 3 \\ 16 & 4 & 7 & 16 & \infty \end{bmatrix}$$

8. a) Write the program for n-queen's problem.
b) Write a note on Minimum Spanning Trees.

CODE No.:10BT51202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

COMPUTER GRAPHICS

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the different input and output components that are typically used with Graphics Workstations.
b) List the operating characteristics of the following display technologies:
i) Raster Refresh systems ii)Vector Refresh systems iii)Plasma Panels.

2. a) Explain the Line drawing algorithm.
b) Explain in detail the Circle generation algorithm.

3. a) Differentiate window and view port.
b) Write the transformation matrix for rotation about a fixed point.
c) Give the composite transformation for two successive translations.

4. a) Explain the concept of Polygon Clipping with neat diagrams.
b) Clip a line segment between points (1, 3) to (5, 17) using Cohen-Sutherland clipping algorithm so that it fit into view port with left bottom at (2, 5) and right top at (5, 12).

5. a) What is Polygon? Explain different type of polygons. Explain the various approaches used to represent polygon.
b) Explain the procedure for generation of various surfaces and curves using B-Spline method.

6. a) Explain the basic three-dimensional transformation functions.
b) Write a routine to perform clipping in homogeneous coordinates.

7. a) Write the steps of depth-buffer algorithm to detect visible surfaces.
b) Develop a routine to implement the scan-line algorithm for displaying the visible surfaces.

8. a) Discuss about a design of Animation Sequence. How frame-by-frame animation works?
b) Briefly explain any four Animation techniques.

CODE No.:10BT60101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

ESTIMATION AND QUANTITY SURVEYING

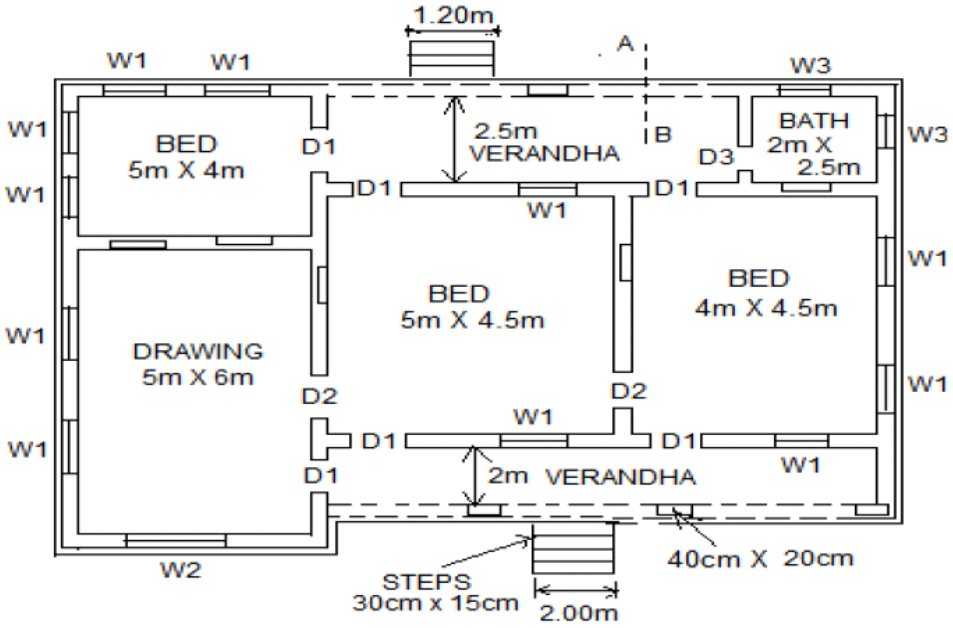
[Civil Engineering]

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

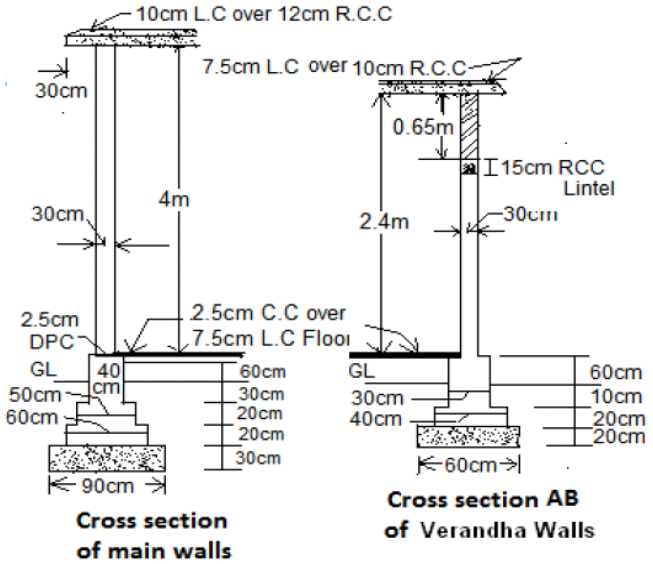
Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between detailed specifications and general specifications with example.
b) List out the various items of work involved in the construction of class 'A' residential building.

2. Work out the quantities for the following items for **Fig.1** shown below
a) Earth work excavation
b) Brick work in foundation and plinth
c) R.B.work in lintels
d) No. of bricks required for foundation and plinth



PLAN



Doors:
D1-120cm x 210cm(1.2m x 2.1m)
D2-100cm x 200cm(1.0m x 2.0m)
D3-75cm x 180cm(0.75m x 1.8m)
Windows:
W1-100cm x 150cm(1.0m x 1.5m)
W2-200cm x 150cm(2.0m x 1.5m)
W3-75cm x 120cm(0.75m x 1.2m)
Shelves:
S-100cm x 150cm(1.0m x 1.5m)
LINTEL OVER DOORS,WINDOWS
E.T.C 15cm R.B.

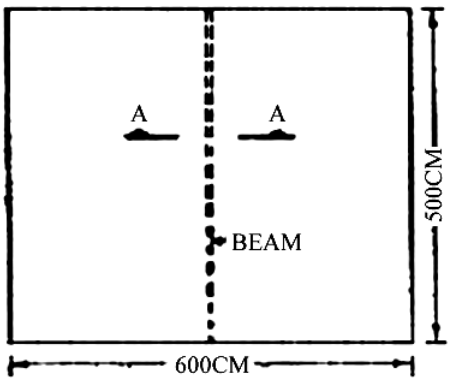
Fig.1

3. Estimate the quantity of earth work for a portion of a proposed road from the following data. Proposed formation width of road is 10m, side slopes 1½:1 in cutting and 2:1 in banking. Assume that there is no transverse slope of the ground.

Distance (m)	0	60	120	180	240	300	360	420	480	540
RL of GL	73.12	72.44	71.86	72.08	71.30	70.80	70.54	70.82	70.96	71.50
RL of formation	72.42	Downward gradient 0.8%				Upward gradient 0.5%				

4. a) Calculate rate analysis for 12 mm cement plastering in ceiling (1:3) with coarse sand.
b) "The analysis of rate is usually worked out for the unit of payment of a particular item of work under two heads". What are they? Discuss.

5. A room of 600 cm long and 500 cm wide has a flat roof. There is one T-beam in the centre (cross section below the slab 30cm x 50cm) and the slab is 15 cm thick. Estimate the quantity of iron bars required for reinforcement (for the T-Beam only) from the data given below. Main bars - 8 No.s 25 mm dia in 2 rows of 4 each (all 4 in the bottom being straight and others bent. (Stirrups - 10 mm dia. and 15 cm centre to centre throughout; Anchor bars - 2 Nos. 16 mm dia.; Use cover = 25mm and the degree of bend =45°).



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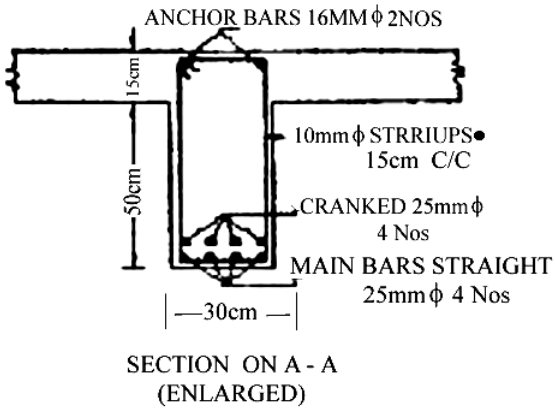

SECTION ON A - A
(ENLARGED)

6. Explain the following briefly;
a) Piece work agreement b) Tender document
c) Contract document d) Arbitration and its needs.

7. Explain the following briefly;
a) Purpose of valuation
b) Sinking fund and scrap value
c) Depreciation
d) Free hold property

8. Explain detailed specification for the following items.
a) Earth work in excavation b) Sand c) Cement d) Plastering.

CODE No.:10BT60102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

STEEL STRUCTURES - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain all types of rolled steel sections with neat sketches.
b) Differentiate between working stress method and limit state design of steel structures.

2. a) How do you classify the bolted connections?
b) Two plates 10 mm and 18 mm thick are to be jointed by double cover butt joint. Design the joint for the following data.
Factored design load = 850 kN.
Bolt diameter = 20 mm
Grade of steel = Fe 410
Grade of bolts = 4.6
Two cover plates (one on each side) = 8 mm thick.

3. A 150 mm **x** 115 mm **x** 12 mm angle section is to be connected to a 12 mm thick gusset plate at site. Design the fillet weld to carry a load equal to the strength of the member.

4. Design a double tension member connected on each side of a 10 mm thick gusset plate to carry a factored axial force of 340 kN. Use 20 mm black bolts. Sketch the member.

5. Design a simply supported beam, using ISMB section for an effective span of 6 m, subjected to a factored uniformly distributed load of 30 kN/m. Assume that it is laterally supported throughout. Apply all the necessary checks.

6. Design a compression member 3.6 m long subjected to a factored load of 6500 kN. The compression member is held at both ends and restrained in direction at one of the ends.

7. Design a built-up column consisting of two channel sections placed back to back with a clear spacing of 250 mm between them. The column carries an axial load of 1200 kN and is having an effective length of 6 m. Design double lacing for the column.

8. Design a slab base for a column section ISHB 350 @ 618.03 N/m made with Fe 410 grade is subjected to a factored axial compressive load 1200KN. The base rests on concrete pedestal of grade M20.

CODE No.:10BT60103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

WATER RESOURCES ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss in brief various methods of surface irrigation.
b) Explain:
i) Methods of improving soil fertility ii) Standards of irrigation water

2. a) Derive the relationship between Duty, Delta and Base period.
b) A field channel has culturable commanded area of 2000 hectares. The intensity of irrigation for gram is 30% and for wheat is 50%. Gram has a kor period of 18 days and kor depth of 12 cm, while wheat has a kor period of 15 days and kor depth of 15 cm. Calculate the discharge of the field channel.

3. a) Describe briefly with neat sketches the various types of weirs.
b) Write a brief note on Khosla's theory of design of weirs on permeable foundation.

4. a) Classify various types of dams. Discuss in detail.
b) Explain how the storage capacity of a reservoir is fixed.

5. a) Design the practical profile of a gravity dam for the following data:

R.L of base of dam	= 194 m
R.L of HFL of reservoir	= 230 m
Specific gravity of masonry	= 2.4
Safe compressive stress in masonry	= 1200 kN/m^2

b) Explain briefly the different forces that may act on a gravity dam.

6. a) Enumerate the different types of earthen dams and draw neat sketches showing each type.
b) What are the various measures of control of seepage?

7. a) Explain the canal head regulator with the help of a neat sketch.
b) Define and derive expressions for proportionality and flexibility.

8. a) Write a note on selection of suitable type of cross drainage works.
b) What do you understand by level crossing?

CODE No.:10BT60104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

ENVIRONMENTAL ENGINEERING - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the objectives of water supply systems?
b) Draw the flow diagram of public water supply systems and explain.

2. a) Explain the significance and impacts of the following water quality parameters. Present their drinking water standards.
i) Dissolved Oxygen ii) Nitrates iii) Fluorides
b) Explain the membrane filter technique used for bacterial analysis.

3. a) List out the valves in water distribution system. Describe the reflux valve used in a water distribution network.
b) In a water supply, scheme to be designed for serving a population of 5 lakhs, the storage reservoir is situated 6 km away from the city and the loss of head from the source to city is 15m. Calculate the size of the supply main by using
i) Hazen-williams formula taking $C_H = 130$;
ii) Darcy-Weisbach formula taking f = 0.012; and
iii) Manning's formula taking n = 0.011;
assuming a maximum daily demand of 210 litres per head per day and half of the daily supply to be pumped in 8 hours.

4. a) Define wholesome and palatable water. List out water borne disease and how the water borne disease can be prevented.
b) Mention the common impurities in water which should be taken into consideration in deciding the quality of water. Describe the method of estimation of total solids in water sample.

5. a) What is the significance of aeration? Explain the methods of aeration commonly used in the treatment of water.
b) Compute the dimensions of a continuous flow rectangular setting tank for a population of 20000 persons with a daily per capita water allowance of 120 liters. Assume detention period to be 6 hours.

6. a) With the help of a sketch, explain the working of backwash system in a rapid sand filter. What are the advantages of backwash in RSF?
b) What do you mean by disinfection and explain two methods of disinfection for water treatment.

7. a) Derive an expression for the discharge correction factor while analyzing the pipe networks using Hardy-cross method

b) A small town with population 50,000 is to be supplied water by constructing a distribution reservoir. Using the data given below estimate the capacity of the distribution reservoir if

i) pumping is done constantly at uniform rate and

ii) if pumping is done at constant rate between 8.00 to 16.00 hours

07.00 - 08.00	30 % of daily supply
08.00 - 17.00	40 % of daily supply
17.00 - 19.00	25 % of daily supply
19.00 - 07.00	5 % of daily supply

8. a) Sketch the sequence of components is a service water supply connection. Name the components and indicate their functions.

b) Write notes on;

i) Types of valves ii) Pipe materials

CODE No.:10BT60105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

TRANSPORTATION ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the necessity and objects of highway planning.
b) What are the various objectives of preliminary survey for highway alignment? Enumerate the details to be collected and the various steps in the conventional method.

2. a) Enumerate the steps for practical design of superelevation.
b) Design the rate of superelevation for a horizontal highway curve of radius 500 m and speed 100 kmph.

3. a) List various tests to be done on bitumen used for construction. Explain any one in detail.
b) Write notes on Los Angeles Abrasion test performed on aggregates, also discuss desirable properties of cement.

4. a) What are the factors influencing the design of Flexible Pavements? Explain.
b) Describe the types of joints to be provided in a rigid pavement.

5. a) Write an explanatory note on the cross drainage and drainage structure.
b) Estimate the design quantity of flow on a road side drain of 20 years period of occurrence of storm from the following data:
Width of drainage area along bare soil with cross slope 1.2% = 300m
Length of drainage area and open drain = 650m
Allowable velocity of flow = 0.5m/s
Weighted average rolling of runoff cutoff = 0.30

6. a) What are the functions of Ballast in a railway track? Explain and also give the requirements of good ballast material.
b) Explain about the following:
i) Adzing of Sleepers
ii) Coning of Wheels
iii) Sleeper density

7. a) What do you understand by equilibrium cant and degree of curve? Explain.
b) A curve of 5^{o} is situated on a BG track. If the maximum permissible speed on curve is 60 kmph, determine the equilibrium cant. What is the maximum speed that can be permitted allowing maximum cant deficiency?

8. Explain various factors affecting the selection of a suitable site for an airport.

CODE No.:10BT60106

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

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 and explain them in detail.
b) Differentiate between disturbed, undisturbed and non-representative samples.

2. a) Differentiate between Rankine's and Coulomb's theories of lateral earth pressures.
b) A retaining wall with soft saturated clay back fill is 6 m high. The unit weight of clay is 16 kN/m^3 and unit cohesion is 20kN/m^2. Determine
i) Maximum depth of tensile cracks.
ii) Total active earth pressure before cracks occur and
iii) Total active earth pressure after the cracks.

3. a) What are the different types of retaining walls and state its suitability?
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 32^0.The base of the wall is placed 6.0 m below the top of the backfill. The thickness of the base and that of the stem is 0.4 m. Unit weight of masonry is given as 19 kN/m^3.The base width is 3.5 m. The angle of friction between the concrete and the foundation material can be taken as 20^0. Check the stability of the retaining wall against sliding and overturning.

4. a) Explain in detail the different methods of improving stability of slopes.
b) An infinitely long slope having an inclination of 26° in an area is underlain by firm cohesive soil (G = 2.72, e = 0.50). There is a thin weak layer of 6 m below and parallel to the slope surface (c^1 = 25kPa, ϕ^1 = 16°). Compute the factor of safety
(i) when slope is dry
(ii) when ground water flow occurs parallel to the slope on the ground surface.

5. a) Explain Terzaghi's bearing capacity theory for a shallow foundation. State the assumptions involved. Explain how the bearing capacity equation is modified for i) Local shear failure and ii) Finite plan dimensions.
b) A square footing 2.5m×2.5m and carries a load of 2000 kN. Find the factor of safety against bearing failure if the soil below the footing has following values: c= 50 kN/m^2, Ø= 15^0, γ= 17.5 kN/m^3 and foundation is taken to a depth of 1.5m. Take N_c= 12.5, N_q= 4.5 and N_γ= 2.5.

6. a) What are the components of settlement of a foundation? How are they evaluated for cohesive soils?
b) A 30 cm square bearing plate settles by 8 mm in the plate load test on cohesionless soil, when the intensity of loading is 180 kPa. Estimate the settlement of a shallow foundation of 1.6 m square under the same intensity of loading.

7. a) What are the factors governs while selection of Piles?

b) A group of 16 piles with 4 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 40 cm and 10 m respectively. The unconfined compressive strength of the clay is 85 kPa. If the piles were placed 1**.**20 m 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. Neglect bearing resistance of Piles.

8. a) Discuss the different shapes of cross-sections of wells used in practice, giving the merits and demerits of each.

b) Describe briefly the sinking of a well foundation and mention the situations where such types of foundations are used. Also discuss the forces for which a well foundation is designed.

CODE No.:10BT60201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

UTILIZATION OF ELECTRICAL ENERGY

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the current-speed and current-torque characteristics of **d.c.** series motors.
b) Explain what do you mean by Load Equalization and how it is accomplished.

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) Compare resistance and arc welding.
b) State the disadvantages of 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. a) State the requirements of good lighting.
b) A hall of 30m × 20m with a ceiling height of 6m is to be provided with a general illumination of 200 lumens / m^2, taking a coefficient of utilization of 0.6 and depreciation factor of 1.6. Determine the number of fluorescent tubes required, their spacing, mounting height and total wattage. Take luminous efficiency of fluorescent tube as 25 lumens / watt for 300 watt tube.

6. a) What are the various electric traction systems in India? Compare them.
b) What are the advantages and disadvantages of electrification of track?

7. a) An electric train has an average speed of 42 km/h on a level track between stops 1400 meters apart. It is accelerated at 1.7 km/h/s and is braked at 3.3 km/h/s. Draw the speed time curve for the run.
b) Explain the terms;
i) Adhesive weight ii) Train resistance iii) Specific energy consumption.

8. Write short notes on:
i) 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) Regular/Supplementary Examinations May - 2015

POWER SEMICONDUCTOR DRIVES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the fundamentals of Thyristor controlled rectifier fed **dc** drives and their operation.

2. a) A 220 V, 750 r.p.m, 200A separately excited motor has armature and field resistances of 0.05 and 20 Ω respectively. Load torque is given by the following expression of T_L = 500 - 0.2N N-m, where N is the speed in r.p.m. Speeds below rated value are obtained by armature voltage control with full field and the speeds above rated are obtained by field control at rated armature voltage.

b) Armature is fed from a three-phase fully-controlled rectifier with a source voltage of 170 V, 50 Hz and field from half-controlled single-phase rectifier with a source voltage of 250 V, 50 Hz. drive operated under continuous conduction mode. Calculate the firing angles for speeds: (i) 600 r.p.m and (ii) 1200 r.p.m.

3. a) Explain briefly the different methods of electric braking for dc motors.

b) Explain four-quadrant operation of dc motors by 1- Ø dual converters in detail with circulating current mode of operation.

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 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. Explain the various slip power recovery scheme in detail with neat diagrams.

7. a) A 5MW, 3-ϕ , 11 KV , Y connection , 6 pole, 50 Hz , 0.9 leading power factor synchronous motor has X_s=10Ω and R_s= 0Ω. The rated field current is 50A. Assume that the stator resistance is to be neglected. The machine is controlled by variable frequency control at constant v/f ratio upto base speed and constant voltage above base speed. Determine the torque and the field current for the rated armature current of 750 r.p.m and 0.8 p.f leading.

b) Explain the operation of voltage source inverter fed synchronous motor drive.

8. Explain briefly the following ;

a) What is stepper motor? Explain drive circuits for stepper motor with neat diagram.

b) Battery powered vehicles

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CODE No.:10BT60301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

OPERATIONS RESEARCH

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State the advantages and limitations of operations research.

b) The manager of an oil refinery must decide on the optimal mix of two possible blending processes of which the inputs and outputs per production run are as shown in the following table:

Process	Input (units)		Output (units)	
	Crude A	Crude B	Gasoline A	Gasoline B
1	5	3	5	8
2	4	5	4	4

The maximum amount available of crude A and crude B are 200 units and 150 units respectively. Market requirements show that at least 100 units of Gasoline X and 80 units of Gasoline Y must be produced. The profits per production run for process 1 and process 2 are Rs. 300 and Rs. 400 respectively. Formulate as linear programming problem and find optimum solution using graphical method.

2. A Securable Sales Group wishes to purchase the following quantities of uniforms:

Uniform type:	A	B	C	D	E
Quantity:	150	100	75	250	200

Tenders are submitted by four different manufacturers who undertake to supply not more than the quantities indicated below.

Manufacturers:	P	Q	R	S
Total Uniform quantity:	300	250	150	200

The group estimates that its profit (in Rs.) per uniform will vary with the manufacturer as shown in the following table:

	A	B	C	D	E
P	27.50	35.00	42.50	22.50	15.00
Q	30.00	32.50	45.00	17.50	10.00
R	25.00	35.00	47.50	20.00	12.50
S	32.50	27.50	40.00	250.00	17.50

How should the order for uniforms be placed.

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) Briefly explain the important characteristics of a Queuing System.

b) A supermarket has a single cashier during the peak hours. Customers arrive at a rate of 20 per hour. The average number of customers that can be processed by the cashier is 24 per hour. Calculate:

a) The probability that the cashier is idle.
b) The average number of customers in the queuing system.
c) The average time a customer spends in the system.
d) The average number of customers in the queue.
e) The average time a customer spends in the queue waiting for service.

5. a) Explain the rules devised by Fulkerson.

b) The time estimates (in weeks) for the activities of a PERT network are given below:

Activity	Time(days)		
	t_o	t_m	t_p
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

Draw the project network and identify all the paths through it. Also determine

i) The expected project length

ii) The standard deviation and variance of the project length

iii) Probability that the project will be completed at least 4 weeks earlier than expected time

iv) The probability of not meeting the due date, if the project due date is 19 weeks.

6. a) Explain the various costs associated with Inventory of items.

b) Find the optimal order quantity for a product where the annual demand for the product is 5400 units, the cost of storage per unit per year is 30% of the unit cost and ordering cost per order is Rs. 600, the unit costs are given below.

Quantity	Unit Cost
$0 \leq Q_1 \leq 2400$	Rs. 12.00
$2400 \leq Q_2 \leq 3000$	Rs. 10.00
$3000 \leq Q_3$	Rs. 8.00

7. a) Define Baye's decision rule. Explain various steps involved in the decision theory.

b) A person has two independent investments A and B are available to him, but he can undertake only one at a time due to certain constraints. He can choose A, first and then stop, or if A is successful, then take B, or vice versa. The probability of success of A is 0.60, while for B it is 0.4. Both the investments require an initial capital outlay of Rs. 10,000 and both return nothing if the venture is unsuccessful. Successful completion of A will return Rs. 20,000 and successful completion of B will return Rs. 24,000. Draw the decision tree and determine the best strategy.

8. a) What is a Two person zero sum game? Explain the Minimax and Maximin Principles.

b) Using the Dominance property solve the following game whose pay off matrix is given below

Player A	Player B				
	B_1	B_2	B_3	B_4	B_5
A_1	3	5	4	9	6
A_2	5	6	3	7	8
A_3	8	7	9	8	7
A_4	4	2	8	5	3

CODE No.:10BT60302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

METROLOGY AND MEASUREMNTS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe briefly the manufacturing of slip gauges.
b) Four length bars A,B,C and D each having a basic length 125mm are to be calibrated using a calibrated length bar of 500mm basic length. The 500 mm bar has an actual length of 499**.**9991 mm. also it was found that
i) $L_B=L_A+0.0001$ mm
ii) $L_C=L_A+0.0005$ mm
iii) $L_D=L_A-0.0003$ mm
iv) $L_A+L_B+L_C+L_D=L+0.0003$mm
Determine L_A, L_B, L_C and L_D.

2. a) Explain about interchangeable manufacturing and the "selective assembly" of machine parts.
b) Define the following terms;
i) Allowance ii) Clearance Fit iii) Interference fit iv) Transition fit.

3. a) What is a comparator? Classify different types of comparators. Describe Mechanical comparator and clearly explain the magnification method adopted in it.
b) Describe the measuring principle and working of sine bar.

4. a) Explain the working principle of Autocollimator.
b) With the help of neat sketch, explain the working principle and applications of tool maker's microscope.

5. a) Describe the terms linearity, repeatability and calibration.
b) Explain the construction and principle of working of a LVDT.

6. List the various methods for torque measurements and explain any two of them.

7. a) Describe the construction and working of thermocouples. Describe the thermo-electric laws and their applications.
b) Explain about various types of strain guage adhesives and attachment techniques.

8. a) Define:
i) speed of response ii) measuring lag iii) fidelity and dynamic error.
b) Derive the equations for time response of a first order system subjected to ramp input.

CODE No.:10BT60303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

HEAT TRANSFER

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain:
a) Fourier law of conduction b) Thermal diffusivity c) Modes of heat transfer

2. a) Explain a method to estimate the error in temperature measurement in a thermometer well with a neat sketch.
b) A mercury thermometer placed in oil well is required to measure temperature of compressed air flowing in a pipe. The well is 140mm long and is made pf steel (K=40W/m °C) of 1mm thickness. The temperature recorded by the well is 100°C while pipe wall temperature is 50°C. Heat transfer coefficient between air and well wall is 30W/m² °C. Estimate true temperature of air.

3. a) Explain significance of Biot number.
b) Consider a rod (mass= 0.1kg, surface area= 0.005m², c=350J/kg.k and k = 7 W/m °C, $\alpha = 1.5 \times 10^{-5} m^2/s$) of diameter 1.2cm initially at uniform temperature of 100°C, cooled to 40°C in 110 seconds by placing an atmosphere at 35°C. Determine heat transfer coefficient of air.

4. Explain the various parameters used in Forced Convection. Using the dimensional analysis obtain an expression for Nusselt Number in terms of Reynolds and Prandtl Numbers.

5. a) Explain regimes of boiling with neat diagram.
b) Steam at 0.2 bar condenses on the outer surface of a 0.75m long, 50cm outer diameter horizontal tube maintained at a uniform temperature 40°C. Calculate condensation rate and heat transfer.

6. a) Why drop wise condensation preferred over film wise condensation?
b) Saturated ammonia vapor at -5°C, condenses on the outer surface of a 0.75m long, 1.27cm outer diameter vertical tube maintained at a uniform temperature -15°C. Calculate average condensation heat transfer coefficient.

7. a) How heat exchangers are broadly classified?
b) A heat exchanger is required to cool 55000 kg/h of alcohol from 66°C to 40°C using 40000 kg/h of water entering at 5°C.
Calculate i) exit temperature of water
ii) heat transfer rate
iii) surface area required for parallel flow type and counter flow type of heat exchanger.

8. Consider the 5 m × 5 m × 5 m cubical furnace, whose surfaces closely approximate black surfaces. The base, top and side surfaces of the furnace are maintained at uniform temperatures of 800 K, 1500 K and 500 K, respectively. Determine:
a) the net rate of radiation heat transfer between the base and the side surfaces,
b) the net rate of radiation heat transfer between the base and the top surface,
c) the net radiation heat transfer from the base surface.

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CODE No.:10BT60304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

CAD/CAM

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. What is meant by a concatenation matrix? Demonstrate how translation, scaling and rotation operations can be performed simultaneously on a graphic element using concatenation matrix.

2. a) What are the basic reasons for introducing CAD? List the benefits of CAD/CAM systems.
b) With a suitable example, explain the various steps involved in design process.

3. a) Write on the importance of studying geometric modeling in CAD.
b) What are entities? Explain the methods of defining lines, arcs and circles in wire frame modeling.

4. a) Explain the difference between absolute and incremental programming methods.
b) What is the general configuration of CNC? What are the programming operating features of CNC? Write the advantages of CNC.

5. a) Discuss the benefits of Group technology.
b) What is Group technology? Classify a component using any one type of coding system.

6. a) Explain with a block diagram, the Computer-Integrated-Production-Planning-Control-System.
b) Distinguish clearly between the Material Requirement Planning (MRP) and Capacity Planning with the aid of block diagrams.

7. a) What is an FMS?
b) Explain in detail the basic components of FMS.

8. a) Discuss about various types of contact inspection methods.
b) Explain about Non-optical computer aided testing.

CODE No.:10BT60305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

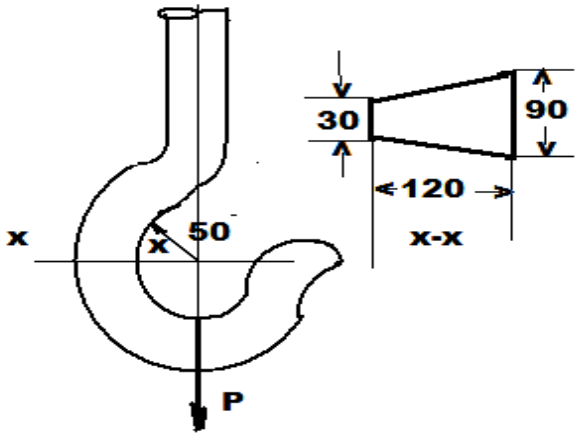
DESIGN OF MACHINE ELEMENTS-II

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A crane hook having an approximate trapezoidal cross-section is shown in the figure below. It is made of plain carbon steel 45C8 (S_{yt} = 380 N/mm^2) and the factor of safety is 3.5. Determine the load carrying capacity of the hook.



2. a) Discuss the various types of power threads. Give atleast 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 %.

3. An electric motor drives an exhaust fan. A fan leather belt is to be used. The following data are known:

	Motor pulley	Fan pulley
Diameter	400mm	1600mm
Angle of wrap	2.5 radian	3.78 radian
Coefficient of friction	0.3	0.25
Speed	700 r.p.m	
Power transmitted	22.5kW	

The belt is 5mm thick and the permissible stress is 2.3 N/sq.mm. Calculate the width of the belt.

4. a) What is bearing characteristics number as applied to the journal bearing?
b) Distinguish between hydrostatic bearings and hydrodynamic bearings.
c) What are the four objectives of the lubrication?

5. A spindle of a machine revolves at 1200 r.p.m and is supported on two Single Row deep groove ball bearings. The bearing at the left support is subject to a radial load of 2500N and a thrust load of 1500N. The bearing at the right support is subjected to a radial load of 2000N only. The machine is required to be used for 8 hours per day for 300 days a year and the desired service life of the bearings is 10 years. Select suitable bearings; ensuring that the sizes of both the bearings is as possible nearer to each other.

6. A reciprocating compressor is to be connected to an electric motor with the help of spur gears. The distance between the shafts is to be 500mm. The speed of the electric motor is 900 r.p.m and the speed of the compressor shaft is desired to be 200 r.p.m. The torque, to be transmitted is 5000 N-m. Taking starting torque as 25% more than the normal torque.
Determine: i) Module and face width of the gears using 20 degrees stub teeth, and
ii) Number of teeth and pitch circle diameter of each gear.
Assume suitable values of velocity factor and Lewis factor.

7. A composite spring has two closed coil helical springs. The outer spring is 15mm larger than the inner spring. The outer spring has 10 coils of mean diameter 40mm and wire diameter 5mm. The inner spring has 8 coils of mean diameter 30mm and wire diameter 4mm. When the spring is subjected to an axial load of 400N, find:

i. Compression of each spring,
ii. Load shared by each spring, and
iii. Shear stress induced in each spring.

The modulus of rigidity may be taken as 84kN/mm^2.

8. Design the **I** section Connecting rod for a single cylinder **IC** engine; using the following specifications:
Diameter of the piston = 100mm ;
Mass of the reciprocating parts = 2**.**25 kg
Length of the connecting rod = 300mm;
Stroke length = 125mm;
Speed = 1500 r.p.m
Maximum explosion pressure = 3**.**5MPa;
Compression ratio = 7;
Factor of safety = 7
Density of the rod material = 8000 kg/m^3 ;
Yield stress in compression = 330MPa

CODE No.:10BT60306

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

AUTOMOBILE ENGINEERING

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) How do you classify automotive vehicles? List out with suitable examples.
b) What is turbo-charging? What are the advantages of turbo-charging?

2. a) What are the functions of a carburettor? Describe the working of a simple carburettor.
b) What are limitations of a carburetion system? What are the different compensating devices used on a carburettor?

3. a) What is radiator? Describe the working of radiator.
b) Describe the functions of contact breaker points, condenser and spark plug.

4. a) What are various pollutants produced from SI engine exhaust? Explain briefly the methods its control.
b) Explain multi-point injection system of a typical Sl Engine.

5. a) What is the function of generator in an automobile?
b) Using simple diagram discuss the construction and working of following accessories
i) Speedometer ii) Flashing Indicator

6. a) Discuss the various types of gear boxes used in automotive vehicles.
b) Describe the working of a synchromesh gear box with help of a sketch.

7. a) What are the various steering systems? Explain Ackermann steering mechanism.
b) Bring our merits of power steering over conventional steering.

8. a) What are the needs of suspension system? Describe torsion bar.
b) What are the merits of hydraulic brake system over mechanical brake system?

CODE No.:10BT60401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

DIGITAL SIGNAL PROCESSING

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

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

Answer any FIVE questions
All questions carry equal marks

1. Find the frequency response and impulse response of the DTLTI described as **y(n)=y(n-1)+y(n-2)+x(n-1).**

2. a) Using DFT and IDFT method, perform circular convolution of the sequence **x(n) = {1, 2, 2, 1}** and **h(n) = {1, 2, 3}.**
b) Write any three properties of Discrete Fourier Series.

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) Determine the direct form of following system $\mathbf{H(z) = 1+2z^{-1} - 3z^{-2} + 4z^{-3} - 5z^{-4}}$

b) For the system function $H(z) = \dfrac{1 + z^{-1} + z^{-2}}{\left(1 + \dfrac{1}{2}z^{-1}\right)\left(1 + \dfrac{1}{6}z^{-1}\right)}$, obtain Parallel Structure.

5. Design **B**utterworth filter using bilinear transformation method for the following specifications

$\mathbf{0.8 \le |H(e^{j\omega})| \le 1;}$ $\mathbf{0 \le \omega \le 0.2\pi}$

$\mathbf{|H(e^{j\omega})| \le 0.2;}$ $\mathbf{0.6 \le \omega \le \pi}$

6. a) Explain the procedure for designing FIR filter using windows.
b) What are the disadvantages of Fourier series method?

7. a) Explain the interpolation and decimation process with an example.
b) Obtain the two folded expanded signal y(n) of the input signal x(n).

$$x(n) = \begin{cases} n & n > 0 \\ 0 & otherwise \end{cases}$$

8. Write short notes on:
i) Signal compression ii) Discrete multitime transmission of digital data.

CODE No.:10BT60402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) A signal band limited to 4KHz is transmitted using binary PCM on a channel having bandwidth 40KHz. Design the PCM system and draw a block diagram showing all the parameters of LPF, sampler, quantizer and encoder.
b) What is companding in PCM system? Explain why you need it.

2. a) Explain the conditions to minimize the Slope overload distortion and Granular noise.
b) Let $x(t) = 2\cos(2\pi\ x100t)$. If this signal is sampled at 1 KHz for delta modulator, what is the maximum achievable SNR in dB?

3. a) With suitable block diagram, explain the principle and operation of DPSK scheme.
b) Sketch the signaling schemas of ASK, PSK and FSK.

4. a) Explain the performance of optimum matched filter receiver.
b) Discuss about the coherent detection of FSK.

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) What is significance of Hamming Codes? Explain the encoding of message word with necessary expressions.
b) Consider a (7, 4) block code generated by

$$G = \begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 1 & 0 \end{bmatrix}$$

Explain how the error syndrome S help in correcting a single error.
What happens when more than one error is occurred?

8. a) Explain the conventional codes and its properties.
b) Describe and discuss Viterbi algorithm.

CODE No.:10BT60403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

MICROWAVE ENGINEERING

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the advantages of microwave frequencies over low frequencies waves?
b) Derive the relation between guide wave length, cut-off wave length and free space wave length.
c) An air filled rectangular wave guide has dimensions of 2.286 cm X 1.016 cm and is supporting TE10 mode at a frequency of 9800 MHz. Calculate wave guide impedance. Calculate the percentage changes in this impedance for a 10 % of increasing in the operating frequency.

2. a) What are cavity resonators? Derive the equation for resonant frequency for a circular cavity resonator.
b) Derive the field expressions for a rectangular cavity resonator.
c) Calculate the lowest resonant frequency of a rectangular cavity resonator of dimension a = 2cms, b = 1cms, d = 3cms.

3. a) With neat sketches, explain the functioning of different types of waveguide phase shifters.
b) What is a directional coupler? Explain the working of Bethe hole directional coupler.

4. a) Show that a 3-port perfectly matched junction is a circulator. What are its applications?
b) Derive the S-matrix of a Directional Coupler.
c) Explain about Faraday rotation.

5. a) What are the limitations of conventional tubes at low frequencies?
b) Using Applegate diagram, explain the principle of operation of a Reflex klystron oscillator.
c) What is electronic admittance of Reflex klystron oscillation?

6. a) Explain the function of 8 cavity Magnetron . What is pi mode? How is it separated from other modes? .
b) What is the significance of helix in TWT amplifier?

7. a) Negative resistance devices can be used to produce amplification and oscillation. Explain with suitable examples.
b) Draw the equivalent circuit of a typical parametric amplifier and explain the parameters involved.

8. a) How are microwave measurement different from low frequency measurement? Describe the sources of error and the respective precautions.
b) Explain the attenuation and impedance measurement techniques.

CODE No.:10BT60404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

MICROPROCESSORS AND MICROCONTROLLERS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) With suitable examples, how I/O devices are connected using memory mapped I/O and peripheral I/O.
b) Write short notes on vectored interrupts of 8085.

2. Explain how the registers are organized in 8086 microprocessors.

3. a) Explain procedures and macros with examples.
b) Write an 8086 assembly language program and algorithm for printing a string stored in a memory location (with own assumptions).

4. Explain how to convert an analog signal into digital signal.

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. Write a note on DMA controller interface and its significance.

7. a) Describe briefly about internal and external memories of 8051 microcontroller.
b) List various addressing modes of 8051 microcontroller.

8. a) Explain the interrupt structure of 8051 microcontroller and explain how interrupts are prioritized.
b) What is the difference between the microprocessor and microcontroller?

CODE No.:10BT60405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

VLSI DESIGN

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain integrated circuit design techniques.
b) Explain different processes involved in the fabrication of CMOS transistor with necessary cross sectional diagrams.

2. a) Explain the Drain and Transfer characteristics of **n** Channel enhancement MOSFET.
b) Explain the transfer characteristics of CMOS inverter.

3. a) Explain with suitable diagrams, the lambda-based design rules.
b) Define and give the expressions for any four scaling factors of MOS device parameters.

4. Describe three sources of wiring capacitances. Explain the effect of wiring capacitance on the performance of a VLSI circuit.

5. a) Draw the block diagram of Carry skip adder, the basic cell layout and also explain its principle.
b) Explain the CMOS system design based on the memory elements with suitable example.

6. a) Explain semiconductor integrated circuit design approach using programmable logic arrays.
b) Compare the performance parameters of Complex Programmable Logic Devices and Field Programmable Gate Arrays.

7. a) Explain the terms simulation and synthesis pertaining to VLSI Design.
b) Discuss about design capture and design verification tools.

8. a) Explain how serial scan testing is implemented.
b) Discuss about testing of combinational circuits.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

THEORY OF COMPUTATION

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) 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. a) Design a Moore Machine to determine the residue mod 4 for each binary string treated as integer.
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) Derive the Parse Tree using Left most and Right most Derivations for the given grammar
S → aSS / bSaS/ a
A → a / aA
B → b
b) Prove that the language L= **$\{a^n b^m$ / (m,n ≥0 and m ≠n)}** is not a context free Language

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) Construct a PDA equivalent to the following grammar.
S →a AA, A →aS | bS | a
b) Construct a pushdown automata for the language with set of all strings over alphabet {*a,b*} with exactly twice as many *a*'s as *b*'s.

7. a) Design turning machine that computes
F(m, n) = m - n if m ≥ n
= 0 otherwise.
b) Write short notes on counter machine.

8. a) Explain the undecidability of post correspondence problem.
b) Explain about vertex cover problem.

CODE No.:10BT60502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

UNIX PROGRAMMING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the salient features of the Unix Operating System.
b) Explain the architecture of the Unix Operating System.

2. What is **egrep**? In what way it is different from **fgrep**? With an example and options, describe the additional functions / operations supported by **egrep**, when compared with **grep** and **fgrep**?

3. a) What is a Shell? What are Shell responsibilities? What are different types of shells in UNIX?
b) Write a shell script and explain how it works.

4. a) Explain File Descriptors and System calls with example for each.
b) Explain the **fseek**, **fgets**, **fflush** and **fwrite** commands with a case study.

5. a) What is process control? Explain briefly.
b) Write about zombie process.

6. a) What is race condition? How can we solve in UNIX? Explain.
b) What is a deadlock? How to handle it?

7. a) What is IPC? Briefly describe IPC status commands.
b) What are named pipes? Briefly describe FIFO.

8. a) What is Socket address? Briefly describe connect, bind and listen primitives.
b) List and describe the UNIX redirection operators.

CODE No.:10BT60503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

DATA WAREHOUSING AND DATA MINING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about a Three-Tier Data Warehouse Architecture.
b) What is a Data Warehousing? List the distinguishing features between OLTP and OLAP.

2. a) Define the term Data Mining. Explain the architecture of Data Mining System.
b) Explain the major issues in Data Mining.

3. a) Discuss in detail with examples whenever necessary, Four different views regarding the design of a Data Warehouse.
b) Discuss in detail with examples whenever necessary, the software engineering point of view of a data warehouse and some approaches.

4. a) Explain:
i) Support ii) Confidence iii) Correlation Analysis
b) How to improve efficiency of Apriori? Explain various methods.

5. a) What is a Prediction? Explain the various Prediction techniques.
b) How does Tree Pruning work? What are the enhancements to basic decision tree induction?

6. Discuss in detail with examples whenever necessary;
a) Classification by Bayesian methods.
b) Classification by Rule based methods.

7. a) Explain the process of Mining Time Series Data.
b) Discuss in detail about Mining Sequence Patterns in Biological Data.

8. a) Explain in brief about Text Data Analysis and Information Retrieval.
b) What is Multimedia Data Mining? How do we perform Similarity Search in Multimedia Data?

CODE No.:10BT60504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

DISTRIBUTED COMPUTING

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about different forms of computing.
b) Explain about strengths and weaknesses of distributed computing.

2. a) What is distributed dead lock? How it can be detected? Explain.
b) What are different distributed control models are available? Give details of each.

3. a) Explain message paradigm.
b) What is distributed objects paradigm?

4. a) Explain event synchronization in datagram sockets along with diagram.
b) Compare Iterative and Concurrent Servers.

5. a) Write about reliable and unreliable multicasting.
b) Explain about RPC and RMI.

6. a) Explain about stub downloading in RMI.
b) Narrate the use of the following protocols in internet applications
i) HTTP ii) CGI

7. a) Explain about the grid architecture.
b) What are the drawbacks of grid computing?

8. a) What are mobile agents?
b) Explain basic architecture of mobile agents.

CODE No.:10BT61001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

OPTOELECTRONIC AND LASER INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail about different types of fibers with neat diagrams.
b) Explain about laws of reflection. Derive the expression for critical angle of the fiber.

2. Explain about following
i) Any two light sources ii) Any two photo detectors

3. a) Explain the principle of two-beam interferometery. Give a detailed setup to measure temperature and pressure using Mach-Zehnder interferometer.
b) What is phase difference? How thickness of a glass plate can be measured using Interferometery.

4. a) Explain in detail about three level and four level lasers.
b) Discuss in detail about gas lasers.

5. a) Explain operation of laser Doppler velocity meter with neat sketches.
b) Explain with neat diagrams application of lasers in melting and trimming of material.

6. Explain any four laser medical applications.

7. a) What is a speckle? Explain the basics of speckle photography.
b) Give the difference between normal photography and holography.

8. a) Explain the principle of faraday effect.
b) Construct a magneto-optic device to measure high voltage in a transmission line.

CODE No.:10BT61002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

BIOMEDICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the static and dynamic characteristics of medical instruments.
b) Explain a basic Bioamplifier.

2. a) Explain the way in which a neuronal spike is evoked and transmitted from one neuron to another neuron using a neat diagram.
b) Differentiate sensory nerves and motor nerves.

3. a) Define half cell potential. Discuss briefly various electrodes used in ECG machine.
b) Explain the various electrodes used for measuring biopotentials from heart, brain and muscles.

4. a) Give the relation between electrical and mechanical activities of heart.
b) Explain recording setup of ECG machine with a neat diagram, giving a detailed description of its components.

5. a) Explain the electrode placement for EMG.
b) Give the interpretation of EEG and EMG.

6. a) What is meant by defibrillation? Give the different types of defibrillation with block diagram and explain any one type of defibrillator.
b) Write short notes on significance of Cardio vector.

7. a) Explain in detail about mechanism of the respiratory system.
b) Write a short note on pnemuotachograph.

8. a) Describe the working of artificial kidney.
b) Briefly explain about computed radiography.

CODE No.:10BT61201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define Model. What are the principles and importance of Modelling? Explain.
b) Differentiate between Model and Diagram.
c) Write notes on Conceptual model of UML.

2. a) Enumerate the steps to model the vocabulary of a system.
b) Enumerate the steps to model different levels of abstraction.

3. a) What is a Class Diagram? Explain with one example.
b) Describe the steps to model simple collaborations.

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) Explain about the analysis, design, implementation and testing of use-case driven process development.
b) Describe the steps to forward engineering to reverse engineering a use case diagram.

6. a) What is synchronization? Explain it in detail.
b) How can we model the distribution of objects? Explain with example.

7. a) Write notes on CRC cards.
b) Explain in detail Class diagrams which depicts all the concepts related to class diagram.

8. a) Write notes on Types of analysis classes, Relationships, Packages, Interfaces, Component, Processors and Nodes involved in Object Orientation.
b) Give the Deployment diagram for Automatic Vending Machine.

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

COMPUTER NETWORKS

[Information Technology, Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain TCP/IP Model in detail.

2. a) What is coaxial cable? Explain different types of coaxial cable.
b) Write short notes on mobile telephone system.

3. Discuss in detail about error correction using Hamming method with a numerical example.

4. Write the flow chart of CSMA/CD and briefly explain the operation of CSMA/CD.

5. a) Explain different classes of IPV4 address.
b) What is congestion? Explain any one congestion control technique.

6. Explain the steps to establish and release TCP connection management using finite state transition diagram.

7. a) Explain the domain name system for www.aicte.gov.in
b) Draw the working model of client side and server side connections establishment in WWW.

8. Explain about Public Key Cryptography.

CODE No.:10BT61301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

DIGITAL CONTROL SYSTEMS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw and explain the block diagram of digital control system.
b) Explain different types of sampling operations.

2. a) Find the Z-Transform of unit ramp function.
b) Obtain the z transform of $x(t) = \frac{1}{a}\left(1 - e^{-at}\right)$ where **a** is a constant.

3. a) Solve the following difference equation $2x(k) - 2x(k-1) + x(k-2) = u(k)$
Where **x(k) =0** for **k<0** and $u(k) = \begin{cases} 1, k = 0,1,2, \\ 0, k < 0 \end{cases}$
b) Solve the following difference equation by use of the z transform
x(k+2)+3x(k+1)+2x(k)=0, x(0)=0, x(1) = 1.

4. a) Draw and explain the block diagram of the linear time - invariant continuous-time control system represented in state space.
b) Write about canonical forms for discrete - time state space equations by controllable canonical form.

5. Investigate the controllability and observability of given below system.

$$X(k+1) = \begin{bmatrix} -1 & 1 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & -2 \end{bmatrix} X(k) + \begin{bmatrix} 0 & 1 \\ 2 & 0 \\ 0 & 1 \end{bmatrix} u(k)$$

$$Y(k) = \begin{bmatrix} 0 & 1 & 2 \\ 0 & 1 & 0 \end{bmatrix} x(k)$$

6. a) Write about the stability criterion by the Jury test.
b) Write about mapping between the s - plane and the z - plane.

7. a) Obtain the response of a linear time - invariant discrete - time system to a sinusoidal input.
b) Explain about Bilinear transformation and the "W" plane.

8. a) Explain the design of state feedback controller through Pole Placement.
b) State the necessary and sufficient condition for state observation.

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CODE No.:10BT61302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

ROBOTICS AND AUTOMATION

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Why is automation generally regarded as evolutionary rather than revolutionary?
b) Explain the features of flexible automation.

2. a) Describe the features of an industrial robot .Why these features are necessary?
b) Discuss the Laws of Robotic system.

3. a) Explain the features and applications of hydraulic actuators in Robotics.
b) Describe the principal function of robot vision system.

4. The robot is to be programmed to pick up a part from a known fixed position on a conveyor and to place it at an upstream location on the conveyor so that the conveyor will deliver it back to the pickup point. The fixed pickup position is established by means of a mechanical stop along the conveyor so that the part is always in the same orientation and location for the robot.

5. What are the steps necessary for robotic arc welding?

6. Derive the relationship between force and motor current for a servo-controlled gripper.
The servomotor is driving a gear train with a reduction ratio of n:1. The gear train, in turn, drives a lead screw that has a pitch ***P***. Assume that the screw's efficiency is N_s and that the gear train's efficiency is N_g.

7. a) Discuss about artificial intelligence in robotics.
b) Discuss about the two ways in which multiple robot interference can be applied.

8. a) Describe mobile robot cell layout with a neat sketch.
b) How a robot is helpful in space?

CODE No.:10BT61501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

MODELING AND SIMULATION

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss in detail about Selecting Performance Metrics.
b) What are the special properties of Normal Distribution and explain its key characteristics?

2. a) State and explain M/M/1 analysis with any two examples.
b) i) Explain how user requests are resolved in Interactive Response Time Law .
ii) In a time sharing system with 17 active terminals, with system throughput 0**.**1963, the average think time of the users was 18 seconds .Compute the Response Time using the Interactive Response Time Law.

3. Explain all the steps used in clustering to characterize measured workload.

4. a) Explain the issues in designing a Program-Execution Monitor.
b) Discuss about Software monitors and compare its features with Hardware monitors.

5. a) Define the "weighted harmonic mean". Explain its concept with some sample data.
b) What is meant by good and bad Regression models? Explain with suitable diagrams and how goodness of the model should be measured.

6. a) List out the types of experimental design in detail.
b) Discuss about the general $\mathbf{2^k r}$ factorial design.

7. Explain about the simulation of Inventory System in detail.

8. Explain how to compare and evaluate of Alternative System design of Meta modeling.

CODE No.:10BT62302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2015

IMMUNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Discuss about B cell and T cell epitopes.

2. Discuss about the antigen presenting cells and functions of natural killer cells.

3. Describe the structure and functions of primary and secondary lymphoid organs in immune system.

4. Write briefly about;
   a) Complement fixation test.
   b) Antigen - Antibody - Enzyme binding technique.

5. Discuss about the functions of activated B cells and effector functions.

6. Given an account of T-cells subclasses, activation and effector functions.

7. Describe the Type I and Type II Hypersensitivity reactions.

8. Explain in detail about various Immuno-deficiency diseases with reference to T and B-cells.

CODE No.:10BT70501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

PRINCIPLES OF COMPILER DESIGN

[Information Technology, Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is the significance of grouping the phases in a compiler?
b) Explain the phases of compiler.
c) Explain various language translators (lex, yacc).

2. a) What is recursive descent parser? Construct recursive descent parser for the following grammar.
E ! E + T|T
T ! TF|F
F ! F_|a|b
b) What is ambiguous grammar? Eliminate ambiguities for the grammar:
E ! E + E|E_E|(E)|id.

3. a) Explain the error recovery strategies in syntax analysis.
b) Construct a SLR construction table for the following grammar.
T E E + ?
T E ?
F T T * ?
F T ?
( ) E F ?
id F ?

4. a) Write the quadruple, triple, indirect triple for the statement **a := b_ ? c + b_ ? c.**
b) Explain the role of intermediate code generator in compilation process.

5. a) Define three-address code. Describe the various methods of implementing three-address statements with an example.
b) Give the translation scheme for converting the assignments into three address code.

6. a) Explain the different storage allocation strategies.
b) Explain the parameter passing mechanisms.

7. a) Write and explain live variable analysis algorithm.
b) Explain the use of algebraic transformations with an example.

8. a) Write in detail about function-preserving transformations.
b) Discuss briefly about Peephole Optimization.

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

WEB PROGRAMMING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the functionality of the following tags:
i) COLGROUP ii) COORDS iii) MAP iv) PRE.
b) How do you make an image clickable in HTML? Give an example code.

2. Create a web page which prompts the user for six items of input, stores this in an array and perform the following:
a) Display the array using join()
b) Display the data in array in sorted order.
c) Use splice() to add some more elements into array and display.

3. a) What is Document Type Definition (DTD)? How a DTD is created?
b) Explain XML schemas and Document Object Model.

4. a) Discuss about security issues in Servlets.
b) What is Servlet ? Discuss various methods of javax.servlet.http.HttpServletcalss.

5. a) List and briefly discuss the steps required to utilize JDBC in a program.
b) How the JDBC optional package connection pooling works? Explain with an activity diagram.

6. a) Describe various scripting elements in JSP.
b) Describe the Debugging process in JSP.

7. a) How to create a Javabean? Explain with an example.
b) How to create JSP tag extensions? Explain with an example code.

8. How to develop, deploy and use custom actions in JSP? Explain with an example code.

CODE No.:10BT71204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

CRYPTOGRAPHY AND NETWORK SECURITY

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about various security services.
b) Explain the model for Internet security.

2. a) Explain different cipher block modes of operation.
b) Explain Hamac.

3. a) What is secret key, public key and private key.
b) Consider a Diffie-Hellman scheme with a common prime **q** = 11 and a primitive root $\alpha = 2$
i) If user 'A' has public key Y_A=9, what is A's private key X_A.
ii) If user 'B' has public key Y_B=3, what is shared secret key K.

4. Explain PGP operation with key rings.

5. a) Explain the fields in ESP Header.
b) Explain Oakley key determination protocol.

6. a) What are the web security requirements and elucidate?
b) Explain about steps in SET transactions.

7. a) Explain how proxy accommodates devices that do not implement SNMP.
b) Explain the malicious programs that replicate.

8. a) What is a firewall and mention the design principles?
b) Explain Application Level gateway protocol.

CODE No.:10BT40503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

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) Explain the layered interface of the virtual computers provided by a typical computer system with the help of suitable diagram.
b) Which produces a faster program execution a compiler or a pure interpreter? State and explain hybrid implementation system with the help of suitable diagram.

2. a) Distinguish between pass-by-value and pass-by reference. Explain with examples.
b) Explain resolution and facts with examples.

3. a) Consider the following C program:

```
int fun(int *i) {
   *i += 5;
   return 4; }
void main()
{
 int x = 3;
 x = x + fun(&x);
}
```

What is the value of `x` after the assignment statement in main, assuming
i) Operands are evaluated left to right.
ii) Operands are evaluated right to left.
b) Explain counter controlled loops. What are the design issues for counter-controlled loop statements?

4. a) What are the features of functional programming? Explain.
b) What are the design issues of subprograms and operations? Explain.

5. a) What is resolution and unification in Logic Programming? Why is the unification algorithm used by PROLOG incorrect?
b) What are the different ways to specify semantics?
c) Why is the following assignment illegal?

```
int x;
&x = (int *) malloc (sizeof(int));
```

6. a) What is Exception? Discuss the exception handling in Java and C++.
b) Describe the features of logic programming and its applications.

7. a) Describe the semantics of COND and LET.
b) Explain and elaborate the static-scoped functional programming language: ML.

8. a) What are the key concepts of Python, PERL, and ABAP?
b) Explain in detail about procedural abstraction and data abstraction.

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

LINEAR AND DIGITAL IC APPLICATIONS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List the order of IC over discrete component circuit and classify ICs on the basis of application, device used and chip complexity. Explain each.
b) Design an amplifier with a gain of -10 and input resistance equal to 10kΩ.
c) Give two reasons why an open loop op-amp is unsuitable for linear applications.

2. a) What is a precision diode?
b) Draw the circuit of a full wave rectifier and explain how it gives the average value.
c) Name the circuit that is used to detect the peak value of the non-sinusoidal waveforms. Explain the operation.

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 and explain the operation of CMOS logic, AND-OR-INVERT and OR-AND-INVERT.
b) Explain the concept of CMOS steady state electrical behavior.

5. a) Draw the circuit schematic of a TTL NAND gate. Why TOTEMPOLE output stage is necessary. Explain its operation with the help of its transfer curve.
b) Compare different logic families with respect to the parameters:
i) Propagation delay ii) Noise Margin iii) Fan-out iv) Power dissipation

6. a) Explain the terms entity, is, port, in, out and end pertaining to VHDL complier. Write a VHDL program using all the above terms and explain the same.
b) Explain about the elements of VHDL given below with examples.
i) Compiler directives ii) Comments

7. a) Write a dataflow VHDL program for a simple 8-bit multiplexer.
b) Design a priority encoder for 16 inputs using two 74***X***148 encoders.

8. a) Compare latch and Flip flop. Show that the logic diagram for both, explain the operation with the help of function table.
b) With neat sketches explain the synchronous counters and compare synchronous and asynchronous counters.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

DESIGN AND ANALYSIS OF ALGORITHMS

[Information Technology]

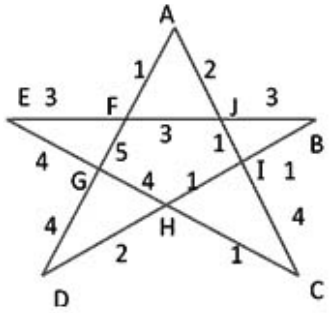
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is the use of asymptotic notations? Explain different asymptotic notations with suitable examples.
b) Find the complexity of below recurrence:
$T(n) = 3T(n-1)$, if $n > 0$
$= 1$, otherwise.

2. a) Explain in detail about weighted union and collapsing and find algorithms with suitable examples.
b) Give a short note on biconnected components.

3. a) Explain Dijkstra's shortest path with an example.
b) Apply Traveling Salesman Problem to the graph given below.



4. a) Discuss in detail about general method of greedy technique.
b) Find an optimal solution to the knapsack instance **n = 7, m= 15**
(p1, p2, p3, ….p7) = (10, 5, 15, 7, 6, 18, 3) and **(w1, w2, w3, ...w7) (2, 3, 5, 7, 1, 4, 1)**

5. a) Write a detailed note on the general method of dynamic programming.
b) What is the Traveling Salesperson problem? Solve the problem with the associated adjacency matrix being

$$\begin{bmatrix} -10 & 15 & 20 \\ 5 & -9 & 10 \\ 6 & 13 & -12 \\ 8 & 8 & 9 \end{bmatrix}$$

6. a) Describe graph coloring problem and its time complexity.
b) Describe how Eight Queen's problem can be solved using back tracking and also write an algorithm to implement the same.

7. Draw the portion of the state space tree generated by LCKNAP for the knapsack instances: N=5; **$(p_1,p_2,\ldots p_5)=(10, 15, 6, 8, 4)$; $(w_1,w_2,\ldots w_5)=(4, 6, 3, 4, 2)$** and M = 12.

8. Give a brief note on Cooks theorem.

CODE No.:10BT51202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

COMPUTER GRAPHICS

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the various factors that affect the quality of video display devices.
b) Draw the basic design of a magnetic-deflection CRT and explain.

2. a) Explain Line drawing algorithm.
b) Explain in detail about the circle generation algorithm.

3. a) Define Transformation. Explain in detail about basic 2-D geometrical transformations.
b) Write the general form of the matrix for rotation about a point P (h, k).

4. a) Explain in detail the Cohen-Sutherland line clipping algorithm with an example.
b) What are spline curves?

5. a) Explain about different representation of polygon meshes in surface modeling.
b) What is the effect of applying M_{per} to points whose z coordinate is less than zero?
c) Show what happens when an object "behind" the center of projection is projected by M_{per} and then clipped. Your answer should demonstrate why, in general, one cannot project and then clip.

6. With suitable examples, explain all 3D transformations.

7. a) Describe in detail about the depth buffer method to detect visible surfaces.
b) Explain area subdivision and A- Buffer method.

8. a) What is computer animation? What are the steps in designing animation sequences? Explain its various application areas.
b) Explain the various approaches in which the motions of objects are specified in an animation system.

CODE No.:10BT60101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

ESTIMATION AND QUANTITY SURVEYING

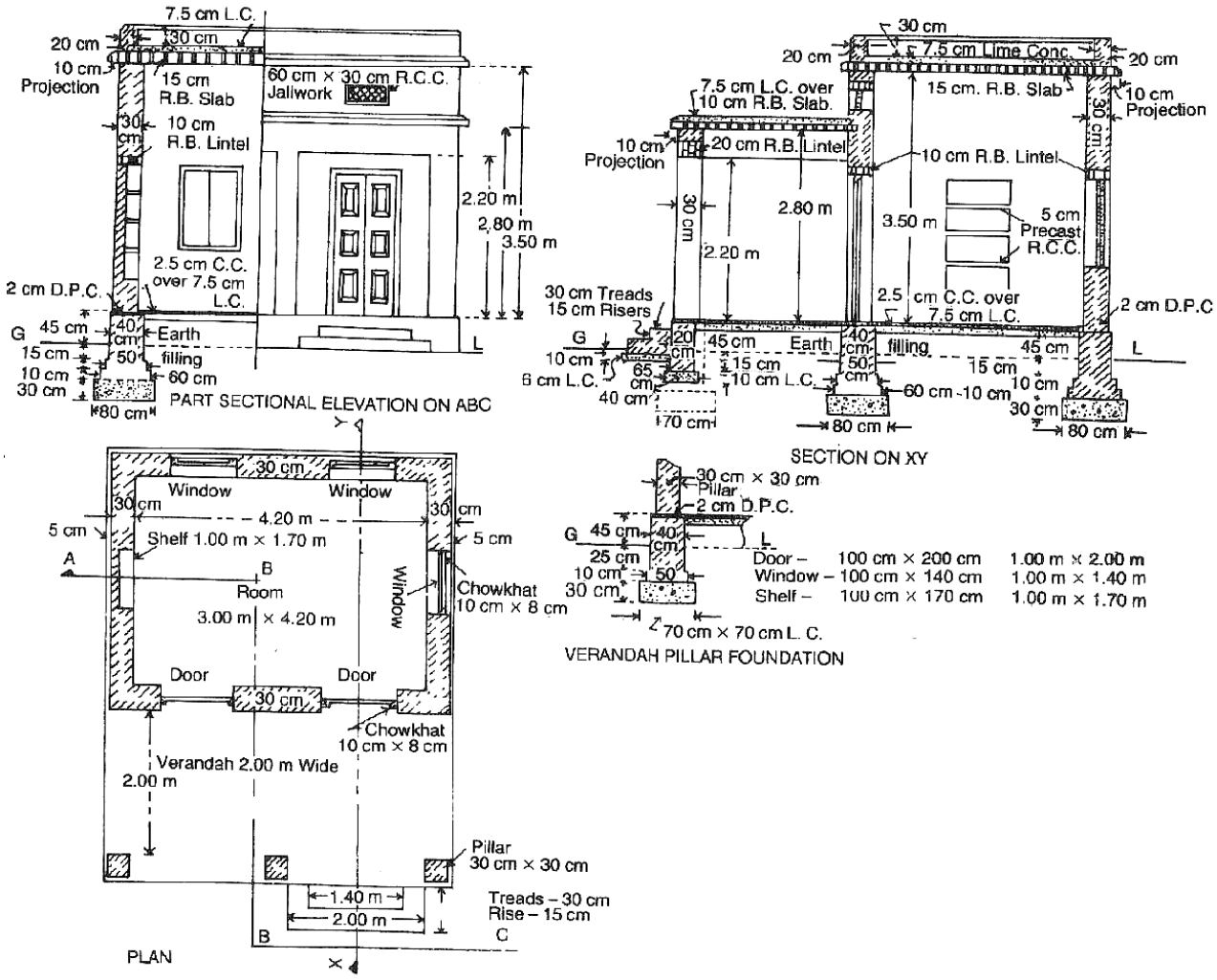
[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. What is the importance of estimating and explain different types of estimates. Write the standard units for various items of works in a building and explain principles of working out quantities them.

2. Estimate the following quantities for the Fig.1 given below:
i) Earth work excavation ii) Brick work in foundation and plinth
iii) 12 mm thick inside plastering iv) White washing three coats.



3. Prepare the detailed estimate for the earthwork for a portion of a road from the following data:

Distance (m)	:	0	100	200	300	400	500	600
R. L. of ground (m)	:	114.5	114.7	115.2	115.2	116.1	116.8	117.0

R. L. of formation (m) : 115.0 → Upward gradient 1 in 200
Formation width of road is 10 m and side slopes in embankment are 2:1.

4. Enumerate the quantity of materials required for the following items of work.
   i) Brick work
   ii) Random rubble masonry.
   iii) Coursed rubble stone masonry.
   iv) Brick on edge floor with cement mortar.

5. Fig.2 shows the longitudinal section and cross section of a simple beam of clear span 5 m. The thickness of supporting wall is 30 cm. Work out the total quantity of cement concrete and steel reinforcement (mild steel)

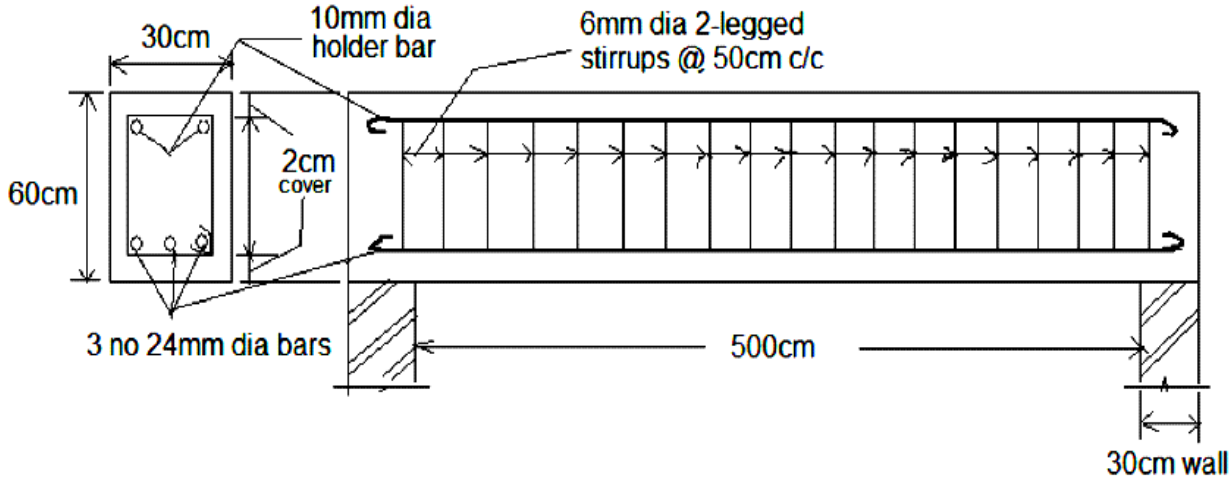


Fig.2

6. Explain the following clauses used in conditions of contract.
   i) Maintenance period
   ii) Arbitration
   iii) Supply of water
   iv) Security deposit

7. a) Differentiate between the following.
   i) Salvage value and Scrap value. ii) Free hold and Lease hold properties.
   b) A building constructed on a site measuring 20m × 30m is fetching a gross rent of Rs. 2,500/- per month. The plinth area of the building is 140 Sq.m. and the cost of construction is Rs. 2,000/-per Sq.m. of plinth area. The estimate life of the building is 70 years. Determine the present value of the property based on rental income assuming a net yield of 9% for sinking fund accumulation, a compound interest of 5% may be assumed. Taxes, annual repairs and all other outgoings may be taken as 32% of the gross income, and the cost of land as Rs. 80/- per Sq.m.

8. List and explain any four general items of work involved in the estimation for a building with its process calculation.

CODE No.:10BT60102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

STEEL STRUCTURES - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the processes 'Annealing' and 'Normalizing', which are used to refine the structure of steel.
b) How does carbon content affect the properties of steel?

2. a) Write a brief note on different types of joints.
b) Design a lap joint between two plates, **Fe 410** grade, 200 mm ×12 mm and 200 mm × 16 mm to transmit a factored load of 200 kN. Use bolts of grade 4.6.

3. An angle section 200 mm ×100 mm ×12 mm is to be connected to a gusset plate of 12 mm thick. Design the fillet weld to carry a load equal to the strength of the member.

4. A tie member consists of two angles of ISA 75 × 75 × 6 mm connected on either side of a 10 mm thick gusset plate using a single row of bolts. Determine the tensile capacity of the member and the number of bolts required to develop full capacity of the member. Adopt 20 mm diameter bolts; pitch = 60 mm and edge distance = 35 mm. The members are tack bolted. What is the effect on tensile strength if the members are not tack bolted and connected on the same side of gusset plate?

5. Design a simply supported beam of effective span 3.6 m subjected to a factored load of 350 kN at its mid-span.

6. Design a column of length 3.3 m subjected to a factored load of 4500 kN. The column is restrained in position but not in direction at both ends.

7. Calculate the design strength of a built up compression member consisting of ISHB 300 with cover plates 325 mm × 16 mm on each flange. The length of the column is 6 m. Assume the bottom of column is fixed and top is pinned.

8. Design a suitable bolted gusset plate for a column ISHB 350 @ 661.2 N/m, carrying an axial compressive factored load of 2459 kN. The base rests on M25 concrete pedestal. Use 24 mm diameter bolts of grade 4.6 for making the connection.

CODE No.:10BT60103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

WATER RESOURCES ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss briefly the history of irrigation engineering in India.
b) Explain the salient features of the drip irrigation system. What are the advantages and disadvantages of the drip irrigation? What is the future of drip irrigation in India?

2. a) Discuss briefly the factors affecting the consumptive use of water.
b) After how many days will you supply water to soil in order to ensure sufficient irrigation of the given crop, if
i) Field capacity of soil = 28%
ii) Permanent wilting point = 13%
iii) Dry density of soil = 1.3gm/c.c
iv) Effective depth of root zone = 70 cm
v) Daily consumptive use of water for the given crop = 12 mm
Assume any other data, not given.

3. a) Discuss briefly the causes of failure of weirs on permeable foundation and their remedies.
b) Discuss Bligh's creep theory of design of weirs on permeable foundation.

4. a) Explain different types of dams along with their suitability, merits and demerits.
b) What is a mass curve? Explain the construction and usage of it.

5. a) State the design criteria of a concrete gravity dam and explain briefly how you will determine the various factors of safety against possible failures.
b) Discuss the evolution of the final profile of a gravity dam from its elementary triangular profile and explain the main principles of its design.

6. a) Enumerate the different types of earthen dams and draw neat sketches showing each type.
b) What are the various measures of control of seepage?

7. a) Explain different types of falls with neat sketch.
b) Discuss the design principles of Sarda type fall.

8. a) Under what conditions drainage and canal crossings are syphons provided?
b) Write a note on selection of suitable type of cross-drainage works.

CODE No.:10BT60104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

ENVIRONMENTAL ENGINEERING - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the factors that influence the planning of a water supply scheme for a city?
b) Explain the objectives of a water supply system.

2. a) Discus the factors that influence the fluctuations in per capita demand and mention various factors governing the rate of demand.
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.

3. a) Discuss in detail the various aspects to be considered while contemplating a water supply scheme to a city.
b) What do you mean by fire demand? How do you estimate and make provisions for fire demand?

4. a) What objections could be there if :
i) Turbidity ii) Alkalinity and iii) Hardness … are present excess in water? State BIS Permissible limits of these for drinking water.
b) Explain different diseases normally occur with polluted water supply.

5. a) Show that setting velocity of a discrete particle is independent of depth of settling tank.
b) What are the objectives of aeration? Explain different types of aeration.

6. a) Explain the objectives of aeration and discuss the methods adopted to achieve aeration in drinking water treatment.
b) Explain the working of rapid sand filter and back wash system with help of a sketch.

7. a) Define hardness. Discuss the method of removal of iron and manganese in the treatment of water.
b) What is reflouridation of water? Explain the Nalgonda technique for deflouridation of water.

8. a) Sketch the sequence of components is a service water supply connection. Name the components and indicate their functions.
b) Write notes on :
i) Types of valves.
ii) Pipe materials.

CODE No.:10BT60105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

TRANSPORTATION ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain briefly the modified classification of road system in India as per the Third Twenty Year Road Development Plan 1981-2001.
b) Explain with sketches the various factors controlling the alignment of roads.

2. a) What is the importance of geometric design and discuss the design control & criteria uses to be considered?
b) Calculate the SSD on a highway at a descending gradient of 2.5% for a design speed of 85 kmph. Assume other data as per IRC recommendations.

3. Explain CBR and the test procedure for laboratory and field tests. How are the results of the test obtained and interpreted?

4. a) Explain 'Flexible and Rigid' pavements and bring out the points of difference.
b) Explain ESWL and the concept in the determination of equivalent wheel load.

5. a) What are the requirements of a good highway drainage system?
b) Discuss how the problem of road construction in water logged areas may be solved.

6. a) What are the functions of Ballast in a railway track? Explain. And also give the requirements of good ballast material.
b) Explain about the following:
i) Adzing of Sleepers.
ii) Coning of Wheels.
iii) Sleeper density.

7. a) Discuss about the types of gradients adopted in geometric design of a railway track.
b) In a layout of a BG yard, a 6° curve branches off from a 3° main curve in opposite direction. If the speed is restricted to 22 kmph on branch line and permissible value of cant deficiency is 7.61 cm, determine the speed restriction on main line.

8. a) Enumerate the factors affecting site selection for airport.
b) Explain wind rose diagram. How is it obtained?

CODE No.:10BT60106

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

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 and explain them in detail.
b) Differentiate between disturbed, undisturbed and non-representative samples.

2. a) Explain the major differences between Rankine's and Coulomb's theories lateral earth pressures.
b) A retaining wall with soft, saturated clay backfill is 6m high. The unit weight of clay is 16kN/m^3 and unit cohesion is 17kN/m^2. Determine:
i) Maximum depth of tensile cracks.
ii) Total active earth pressure before cracks occur and
iii) Total active earth pressure after the cracks.

3. a) A trapezoidal masonry retaining wall 1m wide at top and 3m wide at its bottom is 4m high. The back of the wall is vertical and is retaining a soil ($\phi = 30°$) at a surcharge angle of 20° with the horizontal. Determine the maximum and minimum intensities of pressure at the base of the retaining wall. Unit weights of soil and masonry are 20kN/m^3 and 24kN/m^3 respectively.
b) Derive an expression for design depth of penetration for an anchored bulkheads penetration sandy soil.

4. a) Classify the types of failures of a slope.
b) Calculate the safe height for an embankment rising 70° to the horizontal and to be made with a clayey soil having unit weight of 16 kN/m^3, $\varphi = 15°$ and a cohesion of 20 kN/m^2. Factor of safety may be taken as 2.5, Value of stability number N, corresponding to slope angle $\alpha = 70°$ and $\varphi = 15°$ is 0.14.

5. A strip footing of width 3 m is founded at a depth of 2 m below the ground surface in a ***(c - φ)*** soil having a cohesion $c = 30$ kN/m^2 and angle of shearing resistance $\varphi = 35°$ as shown in Fig. 1. The water table is at a depth of 5 m below ground level. The moist weight of soil above the water table is **17.25 kN/m^3**. Determine
(i) the ultimate bearing capacity of the soil.
(ii) the net bearing capacity and
(iii) the net allowable bearing pressure and the load/m for a factor of safety of 3.
Use the general shear failure theory of Terzaghi For $\varphi = 35°$, $N_c = 57.8$, $N_q = 41.4$ and $N_r = 42.4$.

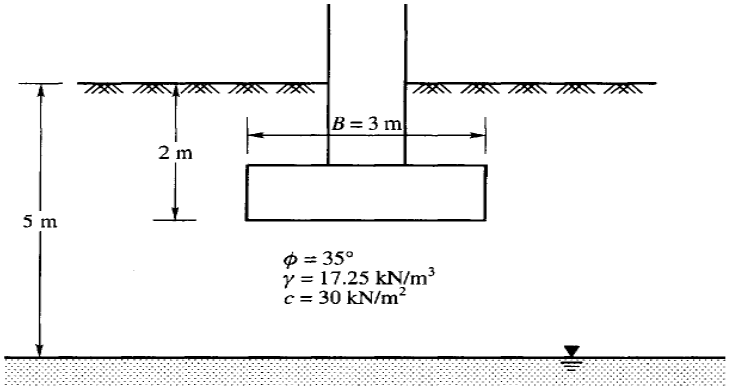


Fig. 1

6. a) What is meant by presumptive bearing capacity? Write the presumptive bearing capacity values for different soils.

b) A footing 2.0 m × 2.0 m is located at a depth of 1.5 m in a sand deposit. Borings have indicated that the average corrected N value at the site is 25. Water table is at a depth of 2 m below the ground surface. Determine the net allowable bearing pressure for a factor of safety of 3 against shear failure and a permissible settlement of 25 mm. Use Teng's equation.

7. 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 30 cm and 10m respectively. The unconfined compressive strength of the clay is 70 kPa. If the piles were placed 90 cm 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. a) What are the types of wells based on shape? What are the merits and demits of each shape for a well.

b) Explain the lateral stability of a well foundation by Terzaghi's Analysis.

CODE No.:10BT60301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

OPERATIONS RESEARCH

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the applications of Operations Research to engineering and managerial problems.
b) An animal feed company must produce 200 kg of a mixture consisting of ingredients X_1 and X_2 daily. X_1 cost Rs. 3 per kg and X_2 Rs. 8 per kg. Not more than 80 kg of X_1 can be used, and at least 60 kg of X_2 must be used. Find how much of each ingredient should be used if the company wants minimize cost.

2. a) What is Hungarian method for solving an assignment problem?
b) Consider the following transportation cost table. The costs are given in rupees; the supply and demand are in units. Determine an optimal solution.

	Destination					
Source	W_1	W_2	W_3	W_4	W_5	Supply
F_1	40	36	26	38	30	320
F_2	38	28	34	34	198	560
F_3	36	38	24	28	30	480
Demand	320	320	400	240	480	

3. a) Define E.O.Q. List various costs associated with E.O.Q.
b) Determine the optimal replacement policy for the data given below:
Group replacement cost Rs. 20 per unit.
Cost of individual replacement of failure is Rs. 90 per unit.
Total number of units in a system is 1000 units.
Mortality data of units to be used in the system is as follows:

Interval of time period (hours)	Probability of failure
0 - 200	0
200.01 - 400	0.06
400.01 - 600	0.30
600.01 - 800	0.48
800.01 - 1000	0.16

4. a) Explain briefly "how the replacement problems are classified".
b) Fleet of cars have increased their costs as they continue in service due to increased direct operating cost (gas and oil) and increased maintenance (repairs, tyres, batteries, etc..).The initial cost is Rs.3,50,000 and the trade in value drop as time passes until it reaches a constant value of Rs.40,000.Given the cost of operating, maintaining and the trade in value, determine the proper length of service before cars should be replaced.

Years of service	1	2	3	4	5
Year end trade in value (Rs.)	2,90,000	2,10,000	1,50,000	1,10,000	40,000
Annual operating cost (Rs.)	11,500	12,800	13,600	14,000	15,000
Annual maintaining cost (Rs.)	3,000	5,000	8,000	12,000	15,000

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) 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) Indicate the difference between decision making under risk and uncertainity in Statistical Decision Theory.

b) A manufacturing company has to select one of the two products A and B for manufacturing. product A requires an investment of Rs. 20,000 and product B Rs. 40,000. Market research survey, which shows high, medium and low demands with corresponding probabilities and sales earnings in thousands of rupees for the two products, is given in table. Construct an appropriate decision tree. What decision should the company take?

Market	**Probability**		**Sales**	
	A	**B**	**A**	**B**
High	0.4	0.3	50	80
Medium	0.3	0.5	30	60
Low	0.3	0.2	10	5

8. a) Define: i) Pure Strategy ii) Mixed Strategy and iii) Saddle Point.

b) Obtain the optimal strategies for both persons and the value of the game whose pay-off matrix is as follows:

Player A	**Player B**					
	B_1	**B_2**	**B_3**	**B_4**	**B_5**	**B_6**
A_1	4	2	0	2	1	1
A_2	4	3	1	3	2	2
A_3	4	3	7	-5	1	2
A_4	4	3	4	-1	2	2
A_5	4	3	3	-2	2	2

CODE No.:10BT60302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

METROLOGY AND MEASUREMENTS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the principle of comparison of an end gauge with a line standard method.
b) Four length bars of basic length 100 mm are to be calibrated using a calibrated length bar of 400 mm whose actual length is 399.9992 mm. It was also found that lengths of bars B,C and D in comparison to A are + 0.0002 mm, + 0.0004 mm and -0.0001 mm respectively and the length of all the four bars put together in comparison to standard calibrated bar is + 0.0003 mm longer. Determine the actual dimensions of all the four end bars.

2. a) List the various types of gauges. Explain any three of them with neat sketch.
b) Enumerate the advantages of fixed gauge.

3. Describe any of the optical comparator with neat sketch and derive an expression for its magnification.

4. a) Draw an illustrative line diagram of a pitch measuring machine and describe its working.
b) Indicate briefly the effect of the lead angle on a three wire measurement for an effective diameter of a screw thread.

5. a) Explain the concept of accuracy and precision with the help of example.
b) Differentiate between Mechanical, Electrical and Electronic Transducers.

6. a) List the various methods for force measurement.
b) Explain the construction and working of a hydraulic force dynamometer with a neat diagram.

7. a) A McLeod gauge has a bulb volume of 100 cc and a capillarity diameter of 1 mm, calculate pressure in Pascals corresponding to readings of 30 mm column of Hg in the capillarity.
b) Write the differences between RTD, Thermocouple and Thermistor.

8. Explain the following terms :
i) Time constant
ii) Transfer function
iii) First order system
iv) Bevel protractor

CODE No.:10BT60303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

HEAT TRANSFER

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define the Fourier Law of Heat Conduction along with mathematical expression and list out the assumptions.
b) List out the various mechanisms of heat transfer.

2. a) What do you mean by critical thickness of insulation? Show that it is given by k_i/h_a where k_i is thermal conductivity of insulation and h_a is the heat transfer coefficient.
b) A stainless steel tube with an inner diameter 7.6mm and outer diameter 8mm is heated with an electric current, connecting the tube directly into an electric circuit. All the heat evolved in the wall of the tube is transferred from the tube through its inner surface. Calculate the volumetric rate of heat generation and the temperature drop across the wall of the tube, if the latter carries a current of 250 Amps. The specific resistance of steel (ρ) = 0.85$\Omega mm^2/m$. The thermal conductivity of steel(K) = 18.6W/m°C.

3. a) Define Biot number and explain its significance.
b) An aluminum alloy plate of 4mm thick at 200°C is suddenly quenched into liquid nitrogen which is at -183°C. Find the time required for the plate to reach the temperature of -70°C. The plate dimensions are 40 cm × 40 cm, C_p = 0.8kJ/kgK, ρ = 3000kg/m^3. Take h= 5000 W/m^2K.

4. Explain the various parameters used in Forced Convection. Using the dimensional analysis obtain an expression for Nusselt Number in terms of Reynolds and Prandtl Numbers.

5. a) Define the terms: i) boundary layer thickness ii) displacement thickness
iii) momentum thickness iv) energy thickness.
b) Air at 40°C and 1.03 bar flows over a flat plate 50cm × 30cm maintained at 60°C at a speed of 4m/sec. Find i) the mass flowing through the boundary.
ii) drag force exerted on the plate.

6. a) What is Condensation? Distinguish between the mechanisms of Film wise condensation and Drop wise condensation.
b) Calculate the nucleate boiling heat transfer coefficient for water boiling on a horizontal tube whose wall temperature is maintained at 10°C above the saturation temperature of the water. Assume that the water is at a pressure of 10 bar. Determine the change in value of the heat transfer coefficient when i) the temperature difference is increased to 20°C at the pressure of 10 bar and ii) the pressure is raised to 20 bar and ΔT_e=10°C.

7. a) Define NTU.
b) Derive an expression for LMTD of counter flow heat exchanger.

8. a) State Planck's law of monochromatic radiation. Explain its significance.
b) Determine the rate of heat loss from a steel tube of outside diameter 70 mm and 3 m long at a temperature of 227°C if the tube is located within a square brick conduit of 0.3 m side and at 27°C. Take ε(steel) = 0.79 and ε(brick) = 0.93.

CODE No.:10BT60305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

DESIGN OF MACHINE ELEMENTS-II

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A reciprocating compressor is to be connected to an electric motor with the help of spur gears. The distance between the shafts is to be 500 mm. The speed of the electric motor is 900 r.p.m. and the speed of the compressor shaft is desired to be 200 r.p.m. The torque to be transmitted is 5000 N-m. Taking starting torque as 25% more than the normal torque, determine :

i) Module and face width of the gears using 20 degrees stub teeth and

ii) Number of teeth and pitch circle diameter of each gear.

Assume suitable values of velocity factor and Lewis factor.

2. A machine vice has single start, square threads with 22mm nominal diameter and 5mm pitch. The outer and inner diameters of friction collar are 55mm and 45mm respectively. The vice can be operated with a force of 125N on the handle having a mean radius of 150mm, the friction coefficients for thread and collar are 0.15 and 0.17 respectively. Assuming uniform wear for the collar, calculate;

i) the clamping force at the jaws.

ii) the overall efficiency of the clamp**.**

3. A medium double leather belt transmits power to drive a mini fan which requires 15kW at 950 r.p.m. The motor pulley 250mm in diameter and the pulley turning with the fan is 900mm in diameter. The center distance is 8 meter. Design a suitable belt for the drive. Assume suitable values of stresses.

4. a) Write short note on classifications and different types of antifriction bearings.

b) The rolling contact ball bearing are to be selected to support the overhung countershaft. The shaft speed is 720 r.p.m. The bearings are to have 99% reliability corresponding to a life of 24000 hours. The bearing is subjected to an equivalent radial load of 1 kN. Consider life adjustment factors for operating condition and material as 0.9 and 0.85 respectively. Find the basic dynamic load rating of the bearing from manufacturer's catalogue specified at 90% reliability.

5. Design a journal bearing for a centrifugal pump from the following data :
Load on the journal = 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 / mm^2. Also calculate mass of the lubricating oil required for artificial cooling, if rise of temperature of oil be limited to 10°C. Heat dissipation coefficient = 1232 W/m^2/°C.

6. Design a side or overhung crankshaft for a 250mm × 300 mm gas engine. Weight of the flywheel is 30 kN and the explosion pressure is 2.1 N/mm^2. The gas pressure at the maximum torque is 0.9N/mm^2, when the crank angle is 35° from I.D.C. The connecting rod is 4.5 times the crank radius.

7. a) What is nipping in a leaf spring? Discuss its role. List the materials commonly used for the manufacture of the leaf springs.

b) The free end of a torsional spring deflects through 90° when subjected to a torque of 4 N-m. The spring index is 6. Determine the coil wire diameter and number of turns with the following data : Modulus of rigidity = 80 GPa ; Modulus of elasticity = 200 GPa; Allowable stress = 500 MPa.

8. Design a C.I. Piston for a 4 stroke IC engine with the following specifications
Cylinder bore = 90mm ; Stroke length = 100 mm; Maximum gas pressure = 5 MPa
Indicated mean effective pressure = 0.75MPa; Mechanical Efficiency = 80%
Fuel consumption = 0.15 kg per BHP hour ; Higher calorific value of the fuel = 32 x 10^3kJ/kg;
Speed 150 r.p.m. Assume any other relevant data required.

CODE No.:10BT60306

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

AUTOMOBILE ENGINEERING

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) How do you classify automotive vehicles? List out with suitable examples.
b) What is turbo-charging? What are the advantages of turbo-charging?

2. a) With a simple diagram, explain the 'multi port fuel injection (MPFI)' system used in modern automotive engines. What are the advantages of MPFI engines?
b) What is 'fuel injection timing' of a diesel engine? What is the importance of optimum injection-timing? Explain briefly.

3. a) With a simple diagram, describe the working principle of a forced-liquid-cooling system. Name the liquid-coolant used in modern automotive engines.
b) With a simple diagram, describe the constructional features of a storage battery. Also write the reactions during charging and discharging.

4. a) What do you understand about EURO norms? List out the exhaust emission levels of commercially operated diesel vehicles of EURO-IV standards.
b) What are the advantages of LPG operated vehicles over petrol operated vehicles? Explain.

5. a) With a simple circuit, describe the mechanism of an automotive engine starting system.
b) Explain the working principle of a temperature indicator of the engine coolant.

6. a) Why is the clutch placed between the engine flywheel and the transmission? What factors it depends ?
b) What is overdrive? Explain its construction, working and method of control.

7. a) Describe the wheel geometry with reference to camber and caster.
b) Explain Davis steering mechanism.

8. a) Describe the working principle of a torsion bar.
b) What are the components of a hydraulic brake system? Explain the functions of each component.

CODE No.:10BT60401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

DIGITAL SIGNAL PROCESSING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Determine the energy and power of the discrete time sequence

x(n) = (½)n, n ≥ 0
= 3 n, n<0

b) Find the output of the system whose input- output is related by the difference equation **y(n) - 5/6 y (n-1) + 1/6 y (n-2) = x(n) - 1/2 x (n-1)** for the **x(n) =4 n u(n)**.

2. a) Discuss the properties of DFT

b) Find inverse Z - transform of $X(Z) = \frac{1}{1 - 1.5z^{-1} + 0.5z^{-2}}$ if

i) **ROC : |Z| > 1** ii) **ROC : |Z| < 0.5**

3. Given **x(n) = 2^n** and N = 8, find **X(k)** using DIFFFT radix-2 algorithm.

4. Write properties of the Z-transform.

5. a) Using impulse invariance with T = 1 sec determine

$$H(z) \text{ if } H(s) = \frac{1}{s^2 + \sqrt{2}\, s + 1}$$

b) Apply impulse invariant method and find H(z) for

$$H(s) = \frac{s + a}{(s + a)^2 + b^2}$$

6. Design an ideal FIR LPF with a frequency response $H_d(e^{jw}) = 1 : for - \pi/2 \le w \le \pi/2$
$= 0 \; for - \pi/2 \le |w| \le \pi$.

Find the values of **h(n)** for N=11 and also find **H(Z)**.

7. a) Explain decimation of sampling rate by an integer factor D and derive spectra for decimated signal.

b) Discuss on sampling rate conversion of rational factor I/D.

8. Write Short notes on

i) Spectral analysis on non-stationary signals 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 - 2014

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss various types of data formats (Electrical representation of binary signals).
b) Discuss **A** and μ laws of compounding in PCM system.

2. a) Give the Comparison between Delta Modulation and PCM systems.
b) Write about 'Granular Noise'.

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, Uncertainty and rate of information.
b) What is meant by mutual information? Discuss its properties.

6. a) Explain about Shanon - Fano coding with an example.
b) Derive the expression for capacity of a Gaussian channel.

7. a) Explain the decoding of encoded message word using linear block codes with relevant expressions
b) The generator polynomial of a (7, 4) cyclic code is $g(x) = 1 + x + x^2$. Find the all 8 possible code words of this code.

8. a) Explain the decoding of convolutional codes using exhaustive search method.
b) Discuss the veterbi algorithm for decoding of convolutional codes.

CODE No.:10BT60403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

MICROWAVE ENGINEERING

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the properties of TEM waves in parallel plane waveguide.
b) Derive the TE_{mn} mode field equations in a rectangular waveguide.

2. a) What is a microwave cavity? Draw and explain about the rectangular cavity resonator.
b) A rectangular cavity resonator is formed with a = 2.2 cm, b = 1.1 cm and distance between two end plates is 8 cm. Calculate the resonator frequency of TE_{110} mode.

3. a) Explain the principle of working E - Plane Tee junction with neat schematics.
b) Explain how unknown impedance can be measured by using magic Tee.
c) What is a resistive card and how it is used in wave guide alternators?

4. a) Explain Unitary property of S - Matrix.
b) Derive the S - matrix of an ideal E - plane Tee.

5. a) Derive an expression with the power output and efficiency of a two cavity klystron amplifier, starting from the basic principles.
b) Can a two cavity klystron be used as an Oscillator?

6. a) Draw the types of Anode blocks used for a Magnetron.
b) Explain the working of multicavity Magnetron.
c) How pi-mode in Magnetron is separated from other modes.

7. a) Explain the function of Gunn diode and its applications as Gunn oscillator at microwave frequencies. How are the Gunn oscillator characteristics measured?
b) Explain the working characteristics of Varactor diodes.

8. a) What are the various blocks of a typical microwave bench? Explain their functionality.
b) Explain the measurement of frequency by
i) Dip method and ii) Slotted line method.

CODE No.:10BT60404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

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 add two 16 bit numbers and to store the result in a memory.
b) Write a brief note on the use of flags and its types in 8085.

2. a) Explain in detail about 8086 memory banks and associated signals for byte and word operation.
b) List out the maskable and non-maskable interrupts available in 8086.

3. a) List the differences between the 8085 and 8086 processors.
b) State any three instructions in 8086 used for arithmetic and logical operations.

4. a) Using model, write a program to communicate between two microprocessors using 8255.
b) Show the control word format of 8255 and explain how each bit is programmed.

5. a) Discuss various Handshaking signals in RS-232C Serial Standard.
b) Explain the functional blocks of USB with necessary diagrams.

6. Explain how the DMA controllers are interfaced with the conventional processors.

7. a) Describe briefly about the Special Function registers of 8051 microcontroller.
b) Write an 8051 program for performing bubble sort on an array of five 8-bit numbers stored in external RAM.

8. Write short notes on the following about 8051 microcontroller.
i) Timers/counter ii) Serial Communication iii) Interrupts

CODE No.:10BT60502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

UNIX PROGRAMMING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the requirements of an operating system? Explain UNIX Architecture.
b) Explain various networking commands and disk utility commands in UNIX.

2. What is **egrep**? In what way it is different from **fgrep**? With an example and options, describe the additional functions / operations supported by **egrep**, when compared with **grep** and **fgrep**.

3. a) Write a shell script that finds the given number is Prime or Not.
b) Write a shell script that finds the GCD of given numbers.

4. a) Write a program for **move** and **cp** commands.
b) Explain the **fseek**, **fgets**, **fflush** and **fwrite** commands with a case study.

5. a) How to start a new process? Explain with a suitable code and related commands.
b) What are interrupted system calls? What are signal sets?

6. Write about different Unix locking techniques.

7. a) What are parent and child processes? Explain.
b) Explain **shmat**, **shmget**, **shmdt** and **shmctl** commands.

8. a) What is a Socket? Briefly describe the role of socket attribute(s) in achieving effective socket communication.
b) With an example and syntax, briefly describe **grep**, **cut**, **paste** and **sort** commands.

CODE No.:10BT60503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

DATA WAREHOUSING AND DATA MINING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define Data Mining? Explain with neat sketch the architecture of a data mining system.
b) How data base and data warehouse are similar and dissimilar?

2. a) Explain how traditional approach's that were used to integrate heterogeneous databases. How are organizations using the information from data warehouses?
b) Explain the process of data warehouse design. What are various OLAP operations in the Multidimensional Data Model?

3. a) Briefly discuss about Data Integration.
b) Describe in brief about Discretization and Concept hierarchy generation.

4. a) Discuss various ways in which the efficiency of Apriori algorithm can be improved.
b) Discuss in detail with examples whenever necessary, the two formats of data for mining frequent itemsets.

5. a) What is Data Classification? Explain about Decision Tree Induction algorithm with an example.
b) Explain the process of evaluating the accuracy of a classifier or a predictor.

6. a) Explain in detail DBSCAN algorithm.
b) Explain any one hierarchical clustering method.

7. a) How trend analysis is evaluated in time series data? Explain.
b) Explain about Alignment of Biological Sequences.

8. a) How do you identify Authoritative Web Pages in web mining?
b) Explain about Latent Semantic Indexing.

CODE No.:10BT60504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

DISTRIBUTED COMPUTING

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the advantages and disadvantages of distributed computing.
b) Explain the Network Architecture with diagram.

2. a) Discuss the block operation with diagram.
b) Explain the data marshalling.

3. a) Explain about peer - to- peer paradigm of distributed computing.
b) What is the use of mobile agent in distributed system? Explain.

4. a) Explain stateful servers.
b) How stream mode socket is used for data transfer.

5. a) Explain CORBA object references.
b) Give an example for CORBA applications.

6. a) Briefly explain about Resource Management System.
b) Briefly explain about Stream Adaptation.

7. a) What are servlets? Explain its architectural support.
b) Briefly describe about the Simple Object Access Protocol (SOAP) model.

8. a) Explain point to point message model.
b) What is message queue system paradigm?

CODE No.:10BT61002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

BIOMEDICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is Bio potential? Discuss various types of bio potential sources.
b) With a neat block diagram, explain the components of medical instrumentation system.

2. a) Draw and explain the generation of a typical action potential waveform.
b) With a neat sketch, explain the transmission of impulse from nerve to muscle.

3. a) Explain half cell potential and give its significance.
b) Explain in detail with neat diagrams the external electrodes used in biomedical applications.

4. a) Explain in detail the direct(strain gauge) and indirect(sphygmomanometer) methods of blood pressure measurement.
b) Write short notes on interpretation of ECG waveform.

5. a) List out the specifications of EMG machine.
b) Give the interpretation of EEG waveform.

6. a) Explain the working of D.C defibrillators.
b) Draw the block diagram of short wave diathermy unit and explain its working in detail.

7. a) Explain about spirometry.
b) Discuss about ventilators.

8. a) Explain the working of Magnetic resonance imaging with the help of neat sketch.
b) Write a short note on Ultrasound waves in medicine.

CODE No.:10BT61201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the advantages and features of Object Oriented software development over Traditional software development? Explain.
b) Describe in brief different types of UML diagrams.

2. a) How can we model the prototypical instances? Explain in detail.
b) List and explain the various stereo types that are supported by dependency relation.

3. a) Write a detailed note on the common properties of an object diagram.
b) Enumerate the steps involved to forward engineer a class diagram.
c) Draw the various entities involved in modeling the student database and also show the various relations involved in it.

4. a) Write Common Modeling Techniques for sequence diagram.
b) Describe the steps to Modeling flows of control by time ordering.

5. a) With the help of a suitable diagram, explain the building of an Activity diagram.
b) What factors should be considered while modeling the behavioral things.

6. a) Enumerate the steps involved to model multiple flows of control and IPC.
b) Discuss in detail about State machines along with simple state, Nested states, concurrent states, different events and Action within each state.

7. a) What are the common uses of a component diagram?
b) Write short notes on Application Programming Interface.

8. Draw the following diagrams for the Automation of a library
i) Use Case Diagram ii) Sequence Diagram iii) 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 - 2014

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 unguided Transmission media.

3. Explain the working of Stop and wait ARQ protocol.

4. a) Distinguish between static and dynamic channel allocation in LAN and MAN.
b) Explain about pure ALOHA.

5. Write the Dijkstra's algorithm in calculating shortest path from source node to all other nodes in the network and illustrate the calculation of the shortest paths from source node to all the other nodes by taking a subnet by using Dijkstra's algorithm. Also write the shortest path tree from source node to other nodes.

6. a) Give UDP header format.
b) Explain timer management in TCP.

7. a) What is a Domain Name System? List and explain different types of domain names.
b) Explain the operation of E-mail service.

8. Differentiate between substitution and transposition techniques in network security.

CODE No.:10BT61301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

DIGITAL CONTROL SYSTEMS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With suitable diagram explain successive approximation type of A/D converter.
b) What are the different types of sampling operations? Explain each.

2. a) Obtain the Z-transform of the following.
i) $f(t) = e^{-t} \sin 3t$
ii) $f(t) = te^{t}$
b) What are the popular methods used to find inverse Z-transform? Explain any two of them briefly.

3. a) Obtain pulse transfer function of a cascaded and closed loop transfer function.
b) Derive the transfer function of first -order hold.

4. a) Obtain a state space representation of the system given in Fig.1. The sampling period T is 1 sec.

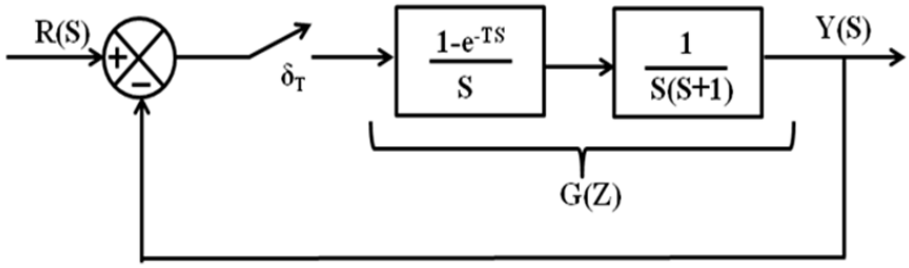


Fig.1

b) Obtain the discrete time state and output equations and the pulse transfer function of the following continuous system described by

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} 0 & 1 \\ 0 & -2 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u$$

$$y = \begin{bmatrix} 1 & 0 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$$

Assume T = 1 sec.

5. a) What is duality between controllability and observability? Explain observability conditions for pulse transfer functions.
b) Investigate the controllability and observability of the following system

$$x(k+1) = \begin{bmatrix} -1 & 1 \\ 0 & -1 \end{bmatrix} x(k) + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u(k)$$

$$y(k) = \begin{bmatrix} 1 & 1 \end{bmatrix} x(k)$$

6. a) Prove that the bilinear transformation maps the left of the S-plane on to unit circle in Z-plane.
b) Consider the closed- loop control shown in Fig.2. Determine the stability of the system when K=1. The open loop transfer function G(S) of the system is:

$$G(S) = \frac{1 - e^{-S}}{S} \quad \frac{1}{S(S+1)}$$

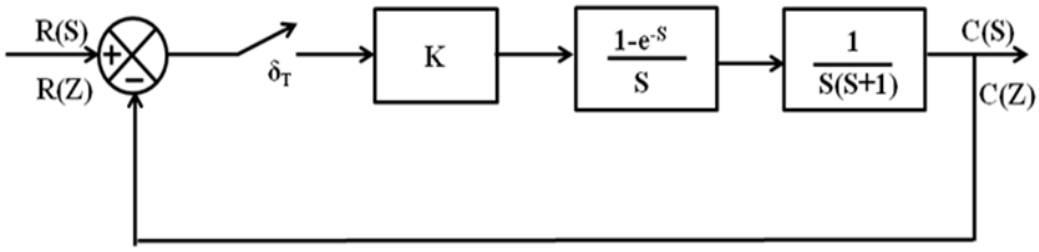


Fig.2

7. a) Explain the basic properties of phase lead and phase lag compensators.
b) The block diagram of a discrete-data control system is shown in Fig.3 in which

$G_P(S) = \frac{2(S+1)}{S(S+2)}$ and T = 0.5 Sec.

Compute and plot the unit step response $C^*(t)$ of the system.

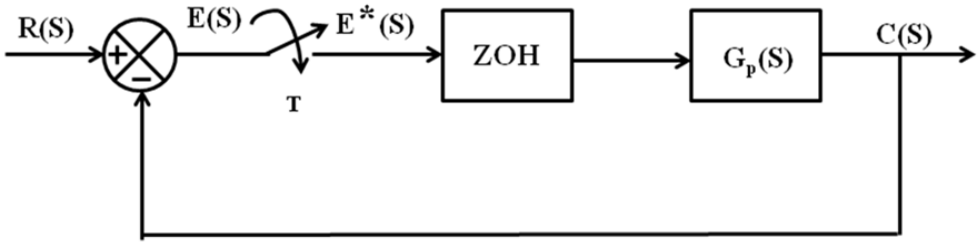


Fig.3

8. A single - input system is described by the following state equation

$$\dot{X} = \begin{bmatrix} -1 & 0 & 0 \\ 1 & -2 & 0 \\ 0 & 1 & -3 \end{bmatrix} X \; ; \qquad X = \begin{bmatrix} 10 \\ 1 \\ 0 \end{bmatrix} u$$

Design a state feedback controller which gives closed loop poles at **-1 ± j2**, **-6**.
Draw a block diagram at the resulting closed loop system.

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CODE No.:10BT61302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

ROBOTICS AND AUTOMATION

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) One of the axes of a robot is a telescoping arm with a total range of 0.50 m (slightly less than 20 in). The robot's control memory has an 8-bit storage capacity for this axis. Determine the control resolution for the axis.
b) A large Cartesian coordinate robot has one orthogonal slide with a total range of 30 in. One of the specifications on the robot is that it have a maximum control resolution of 0.010 in. on this particular axis determine the number of bits of storage capacity the robot's control memory must possess to provide this level of precision.

2. a) Describe the features of an industrial robot. Why are these features necessary?
b) Discuss the Laws of Robotic system.

3. A permanent magnet DC motor is coupled to a load through a gearbox. If the polar moments of inertia of the rotor and load are J_r and J_i , the gearbox has a *N: M* reduction from the motor to the load, the motor has a starting torque *Ts* and a no-load speed ω_{max}, and the load torque is proportional to its speed ***(Ti = kω),***
i) What is the maximum acceleration that the motor can produce in the load?
ii) What is the steady state speed of the motor and the load?
iii) How long will it take for the system to reach a steady state speed?

4. a) Discuss the orthogonal Axis wrists in Robotics.
b) How range of robot is linked with resolution and memory capacity? A robot joint with a linear motion has the traversing range of 50cm with a control memory of 8 bit. Find resolution of the joint.

5. Why are SCARA robots preferred for assembly operations? Compare and contrast Revolute robots and SCARA robots from the viewpoint of assembly operations.

6. a) What are the different layouts of FMS? Explain briefly.
b) What are the different approaches of FMS?

7. Show that the three differential rotations of **δx**, **δy** and **δz** made in any order about the x-, y-, and z- axes, respectively are equivalent to a differentional rotation of dθ about axis K.

8. a) Describe robot-centered cell lay out with a neat sketch.
b) How a robot is helpful in construction trades?

CODE No.:10BT61501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

MODELING AND SIMULATION

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about the classification of Performance Metrics.
b) Define normal, poisson, uniform and weibull distributions.

2. a) Draw the State Transition diagram for a birth and death process and explain.
b) Explain M/M/m Queuing Model with an example.

3. a) Explain the work load components with examples and also write the techniques that are used for work load characterization.
b) Explain how morkov models are useful in queuing analysis.

4. What are the various issues involved in software monitor design? Explain.

5. a) Define the "weighted harmonic mean"? Explain its concept with some sample data.
b) Define what is meant by good and bad Regression models? Explain with suitable diagrams how goodness of the model should be measured.

6. a) Explain the concept of 2^2 Factorial Design with example.
b) Discuss different types of experimental designs used in computer systems.

7. a) Explain the general principles and concepts of discrete-event simulation.
b) List some important considerations of Random-number generation. By using Linear Congruential Method generate a sequence of random numbers with initial value(X_0) = 27, multiplier (a) = 17, increment (c) = 43, modulus (m) = 100.

8. a) Describe output analysis for a single model.
b) Explain the steps involved in development of useful model for input data.

CODE No.:10BT62302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

IMMUNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the factors influence the Immunogenicity with suitable examples.

2. Define T and B cells. Give a detailed note on role of T and B cells in the immune systems.

3. What are lymphoid organs? Sketch the features of primary lymphoid organs of Immune system?

4. Write briefly on:
   i) Enzymatic action on Immunoglobulin.
   ii) Affinity and Avidity.

5. Describe the effector functions T cells with special reference to TH_1 and TH_2 cells.

6. Write a note on structure and functions of MHC-I and MHC-II.

7. Explain the principles, mechanism and significance of Hypersensitivity reactions.

8. List out and describe various autoimmune diseases.

CODE No.:10BT70501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

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) Explain the different phases of a compiler, showing the output of each phase using the example of the following statement:

position : = initial + rate × 60

b) Compare compiler and interpreter with suitable diagrams.

2. a) Construct the predictive parsing table for the following grammar.

$S \rightarrow iEtSS' / a \qquad S' \rightarrow eS / e \qquad E \rightarrow b$

b) Explain about Left Recursion.

c) Write short notes on Left Factoring.

3. a) Explain the basic operations of Shift Reduce Parser and perform Shift Reduce Parsing of the input string "**id1 - id2 * id3**" by conserving the grammar

E→ E- E
E→ E*E
E→ id

b) Explain a method how ambiguous grammar's can be parsed with an example.

4. a) Write a note on the specification of a simple type checker.

b) What is a type expression? Explain the equivalence of type expressions with an appropriate example.

5. a) Write notes on type conversion.

b) Describe about type expressions.

6. a) Explain the different storage allocation strategies.

b) Explain the parameter passing mechanisms.

7. Describe about principal sources of optimization.

8. a) Explain the different issues in the design of a code generator.

b) Generate code for the following C statements:

i) **x= f(a) + f(a) + f(a)** ii) **x= f(a) /g(b,c)** iii) **x= f(f(a))**

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

WEB PROGRAMMING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Create a simple HTML page which demonstrates the use of the various types of lists. Try adding a definition list which uses an unordered list to define terms.
b) Describe the different ways that styles can be added to a page.

2. a) Compare and contrast HTML and DHTML with suitable examples.
b) Write a JavaScript program to validate login page.

3. What is DOM? What are the benefits of using DOM? Write an XML document for a Messaging application and generate DOM tree for that XML documentation.

4. a) What is servlet? Explain lifecycle of a servlet.
b) Explain session tracking using HTTP Session.
c) Write a session tracker that tracks the number of accesses and last access date of a particular web page.

5. Explain the purpose of **`ResultSet`** class? Write a program to insert and retrieve the values from a table using JDBC.

6. Write a JSP program to store user details into database using JDBC. JSP page must read user details from registration form.

7. a) How to create a Java bean? Explain with an example.
b) How to create JSP tag extensions? Explain with an example code.

8. Explain JSP standard tag library.

CODE No.:10BT71204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2014

CRYPTOGRAPHY AND NETWORK SECURITY

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List and briefly define categories of Security services.
b) With Flow Chart, explain Internet RFC Publication process.

2. a) "Exact realization of a symmetric Block cipher depends on the choice of certain parameters and design features" What are they? Explain.
b) Explain the technique that uses a hash function without Encryption for message authentication with a neat diagram.

3. a) Explain Kerberos and X.509.
b) Explain about Euler Toitent function with an example.

4. a) With a neat diagram explain the steps performed by sending PGP entity to transmit a message that is both signed and encrypted.
b) Explain the sub types of multipart MIME content type.

5. a) Explain Authentication Headeo and Encapsulating security payloads format.
b) Explain about OKAELY protocol.

6. Explain about Secure Electronic Transaction.

7. a) Explain how proxy accommodates devices that do not implement SNMP.
b) Explain the malicious programs that replicate.

8. a) Explain the common criteria for Information Technology Security Evolution.
b) What are the limitations of firewalls?

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

ENVIRONMENTAL SCIENCES

[Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe how do you create awareness on environment among public to prevent indiscriminate use of environment.
b) Write a detail account on biotic and abiotic components of Ecosystem.

2. a) Write an essay on Renewable and Non Renewable Resources and associated problems.
b) Discuss the interstate conflicts over the water in India.

3. a) What are the land degradations, soil erosion on biosphere?
b) What are the alternative energy resources? Explain with suitable examples.

4. a) Explain few major threats to Biodiversity.
b) Write an essay on ecological succession.

5. a) Define energy and discuss the energy flow with in the ecosystem.
b) What is a food chain? Describe the different types of food chain.

6. a) What is meant by water pollution? Explain.
b) Write a note on Noise pollution and its effects on human beings.

7. a) Write a detailed note on human rights.
b) Write an essay on T.B.

8. a) List out the details you collect during a visit to an industrial area.
b) What data would you collect for a seminar entitled '**global warming-causes and consequences**'?

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

OPTIMIZATION TECHNIQUES

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. What is a constraint surface? Explain constraint surface in a hypothetical 2D design space.

2. Derive the optimal solution from the Kuhn-Tucker conditions for the problem:

Minimize: $\mathbf{Z = 2x_1 + 3x_2 - x_1^2 - 2x_2^2}$

Subject to $\mathbf{x_1 + 3x_2 \leq 6}$,

$\mathbf{5x_1 + 2x_2 \leq 10}$,

$\mathbf{x_1 \geq 0, x_2 \geq 0}$.

3. Use dual simplex method to solve the LPP:

Minimize $Z = \mathbf{x_1 + x_2}$

Subject to $\mathbf{2x_1 + x_2 \geq 2}$,

$\mathbf{- x_1 - x_2 \geq 1}$

$\mathbf{x_1, x_2 \geq 0}$

4. Solve the following transportation problem using Vogle's approximation method

	W_1	W_2	W_3	W_4	**Capacity**
F_1	8	6	5	4	100
F_2	7	3	9	2	150
F_3	6	5	4	3	175
Demand	75	200	25	125	425/425

5. Find the minimum of $f = \mathbf{\lambda^5 - 5\lambda^3 - 20\lambda + 5}$ by quadratic interpolation method while taking initial step size as $t_0 = 0.5$ and A = 0.

6. Perform 4 iterations, using Powel's method for the function:

Minimize $f(x) = \mathbf{6x_1^2 - 6x_1x_2 - 2x_2^2 - x_1 - 2x_2}$ with $x_1 = \begin{pmatrix} 0 \\ 0 \end{pmatrix}^T$ and $\boldsymbol{\varepsilon} = 0.01$

7. List and explain the characteristics of constrained non- linear programming problems.

8. a) State the Bellman's principle of optimality.

b) A vessel is to be loaded with stocks of 3 items. Each unit of item 'i' has a weight $\mathbf{w_i}$ and value $\mathbf{r_i}$. The maximum cargo weight the vessel can take is 5 and the details of the three items are as follows:

i	$\mathbf{w_i}$	$\mathbf{r_i}$
1	1	30
2	3	80
3	2	65

Develop the recursive equation for the above case and find the most valuable cargo load without exceeding the maximum cargo weight by using dynamic programming.

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

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

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

Answer any FIVE questions
All questions carry equal marks

1. Outline the measurement and significance of elasticity of demand.

2. Explain the internal and external economies of scale.

3. Distinguish between monopoly and monopolistic competition.

4. What is a Joint stock company? Explain various features of the Joint Stock Company.

5. Journalize the following transactions and post them into ledger accounts of Mr. Prakash for the month of December, 2011.

Dec. 1	started business with Rs. 1,00,000 in the bank and Rs. 50,000 in cash
Dec. 2	bought furniture for shop Rs. 25,000 and Motorcycle Rs. 60,000, both paid by cheque.
Dec. 3	paid rent by cheque Rs. 2,000
Dec. 4	bought goods for resale on credit from Madhavi Rs. 50,000
Dec. 5	Cash Sales Rs. 10,000
Dec. 6	Paid insurance by cheque Rs. 1,000
Dec. 7	Cash Sales Rs. 10,000
Dec. 8	Goods returned to Madhavi Rs. Rs. 5,000
Dec. 12	Paid Madhavi by cheque Rs. 20,000
Dec. 13	Cash Sales Rs. 5,000
Dec. 16	Bought stationery, paid in cash Rs. 1,000
Dec. 18	Bought goods for resale on credit from Rao & Co. Rs. 35,000
Dec. 22	Paid Rao & Co Rs. 15,000 by cheque
Dec. 23	Paid wages to assistant in cash Rs. 1,000
Dec. 29	Paid into Bank Rs. 25,000

6. From the following trial balance of Mr. X prepare trading and profit and loss account for the year ending 31st March, 2011 and balance sheet as on that date.

Particulars of Account	Dr. (Rs.)	Cr. (Rs.)
Buildings	20,000	
Capital a/c		60,000
Purchases and sales	10,000	30,000
Opening stock (1-4-2010)	5,000	
Debtors and creditors	12,000	6,000
Drawing a/c	4,000	
Sales returns and purchase returns	2,000	500
Freight	2,500	
Office salaries	8,000	
Wages	1,500	
Postage and telegrams	1,000	
Machinery	15,000	
Bills receivables, bills payable	8,000	2,000
Advertisement	2,000	
Cash in hand	3,500	
Loose tools	4,000	
	98,500	**98,500**

Adjustments:

i) Closing stock was valued at Rs. 6,000.
ii) Interest on capital at 10% and on drawings at 5%.

7. Explain nature and scope of capital budgeting.

8. Explain the features and uses of accounting software Tally.

CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

COMPUTER ARCHITECTURE AND ORGANIZATION

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) With a neat diagram explain Von-Neumann Computer Architecture.
b) Explain Booth's Multiplication algorithm.

2. a) Design a 4-bit combinational circuit decrementer using four Full-Adder circuits.
b) Explain about data manipulation instructions.

3. Explain how the mapping from an instruction code to micro instruction address can be done by means of a read only memory.

4. a) Explain super scalar processor.
b) Explain pipeline processing.

5. a) Explain the use of DMA controllers in a computer system with a neat diagram.
b) Write short notes on semiconductor RAM.

6. a) Explain working principles of USB.
b) Briefly compare the characteristics of SCSI with PCI.

7. Write short notes on
a) Inter Process Communication and Synchronization.
b) Characteristics of Multi Processors.

8. Explain in detail about CISC architecture.

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

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 properties of open loop system.
b) Explain the effect of feedback on the stability of the system.

2. Represent the following set of equation by a signal flow graph and determine the overall gain relating x_5 and x_1.

$\mathbf{x_2 = ax_1 + fx_2}$; $\mathbf{x_3 = bx_2 + ex_4}$; $\mathbf{x_4 = cx_3 + hx_5}$; $\mathbf{x_5 = dx_4 + gx_2}$

3. A unity feedback control system has $G(s) = \dfrac{100}{s(s+5)}$. If it is subjected to unity step input, determine: i) Damped frequency of oscillation ii) Maximum peak overshoot iii) Time to reach for first overshoot iv) Settling time

4. Sketch the root locus of the unity feedback system whose open loop transfer function is $G(s) = \dfrac{1}{s(s+2)(s+4)(s+5)}$.

5. Sketch the magnitude and phase Bode plots and comment upon stability if $G(s) = \dfrac{10}{s(1+0.5s)(1+0.05s)}$.

6. a) Define phase crossover frequency and gain margin.
b) Develop the Polar plot of the system given as $G(s) = \dfrac{1}{(1+s)(1+4s)}$ and determine whether their plots cross real axis.

7. a) For the transfer function $G(s) = \dfrac{30}{s(0.5s+1)}$ and $H(s)=1$. Determine a compensator lag network such that closed loop transfer function will provide a phase margin of 45°.
b) Explain the Lead-Lag compensator design briefly.

8. a) The state equations of a linear system are as follows.

$\dot{x} = Ax + Bu$ *and* $y = Cx$

$$A = \begin{pmatrix} -2 & 0 & 1 \\ 1 & -3 & 0 \\ 1 & 1 & -1 \end{pmatrix} \quad B = \begin{pmatrix} 1 \\ 0 \\ 1 \end{pmatrix} \quad C = \begin{pmatrix} 2 & 1 & -1 \end{pmatrix}$$

Determine the transfer function y(s)/u(s) when it is excited by unit step input
b) Explain various methods of evaluation of state transition matrix of a state equation.

CODE No.:10BT50101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

STRUCTURAL ANALYSIS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A train of wheel loads shown in Fig.1 crosses a span of 43 m. Calculate the maximum positive and negative shear at mid-span of the beam. Also calculate the absolute maximum bending moment.

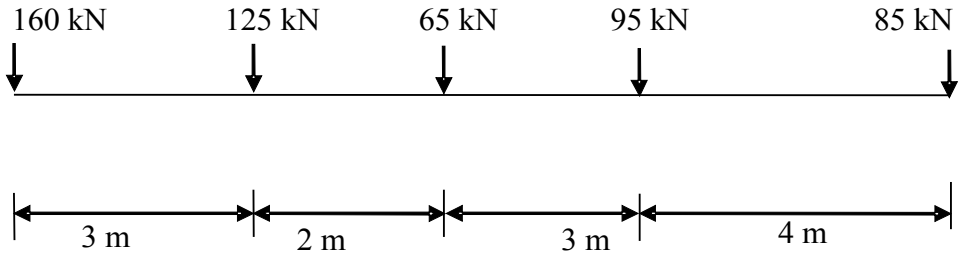

Fig.1

2. A uniformly distributed load (**udl**) of 42 kN/m of 6 m length crosses a girder of span 45 m left to right. With the help of influence lines, determine the values of shear force and bending moment at 14 m from left support, when the head of the **udl** is at 18 m from left the support.

3. A continuous beam ABCD 15m long is simply supported at A and D. The first span of length 6m is loaded with a point load of 10 kN acting at 2m from the left support, the second span of length 4m is loaded with a **udl** of intensity 4 kN/m and the third span is loaded with a point load of 8 kN acting at 3m from the right support. Using the moment distribution method, calculate the moments at the supports.

4. Analyse the continuous beam ABCD shown in Fig.2 by slope deflection method. The support C sinks by 10mm. Take E = $\mathbf{2\times10^5 N/mm^2}$ and I = $\mathbf{4\times10^7\ mm^4}$.

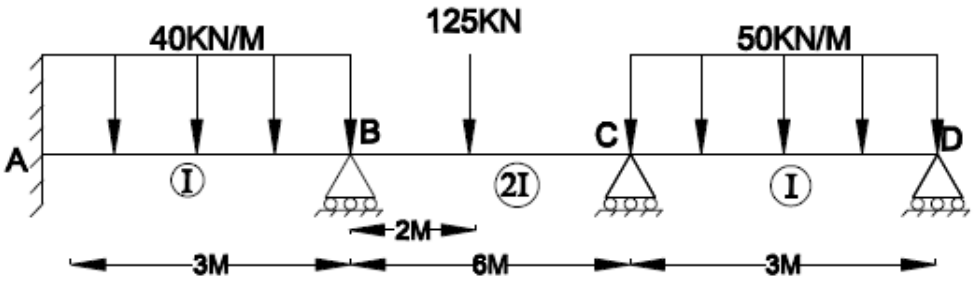

Fig. 2

5. Analyse the continuous beam shown in Fig.3, using Kani's method. Draw bending moment diagram and elastic curve.

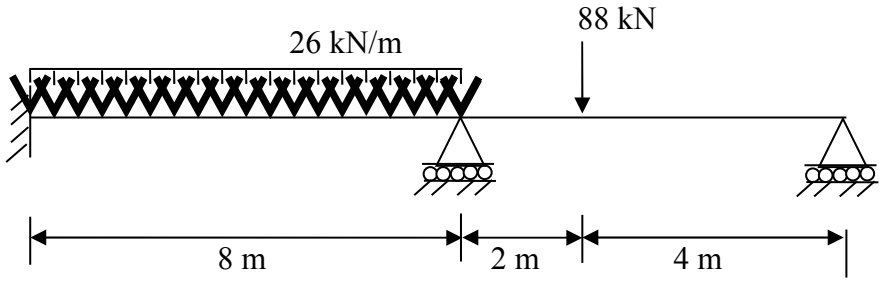

Fig.3

6. Determine the maximum deflection of the beam shown in the Fig.4, using strain energy method. Take E=215 GPa. I = 86 ×10^6 mm^4.

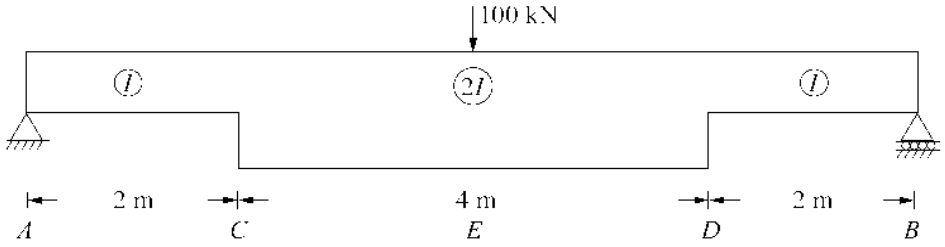

Fig.4

7. Determine the deflection and slope at the free end C of a frame ABC shown in Fig.5. UDL is 10kN/m, Horizontal load is 10kN. Column height is 6m, girder length 3m. EI is same for all members.

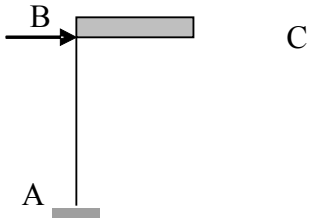

Fig.4

Fig.5

8. Analyse the frame shown in Fig.6 by Portal method. Assume that all the columns have equal area of cross section for the purpose of analysis.

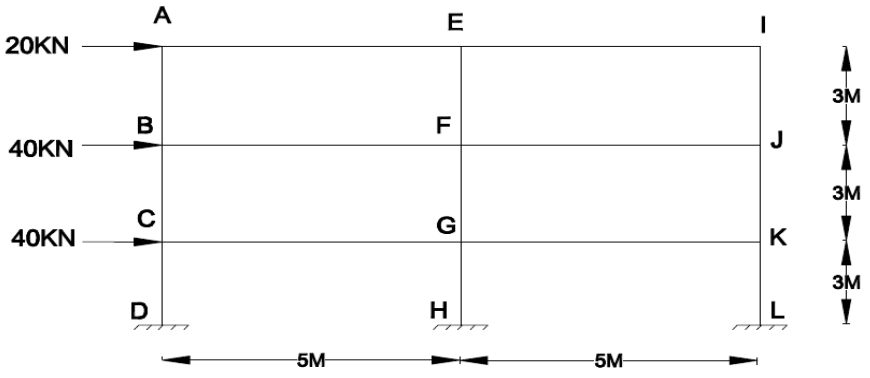

Fig.6

CODE No.:10BT50102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

REINFORCED CEMENT CONCRETE STRUCTURES - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Design a dog legged stair case in a room with clear dimensions **2.5 m × 5.2 m** and the storey height is 3.2 m. Adopt the live load is 3 kN/m^2. Use M 20 Concrete and Fe 415 steel. Draw the reinforcement details.

2. Design a combined footing with strap beam for two columns 400 m × 400 m spaced at 4.5 m centre-to-centre. Each column has to support an ultimate load of 800 KN. The safe bearing capacity of the soil is 150 kN/m^2. Draw the reinforcement details.

3. Design a RC 350 mm square pile transmitting an axial load of 750 kN under service condition. The pile is to be driven into the hard strata upto a depth of 7.5 m. Use M 20 concrete and Fe 415 steel.

4. Design a cantilever retaining wall retaining earth to a height of 5 m above the ground level. The soil has density of 18 kN/m^3 and the angle of internal friction is 35°. The safe bearing capacity of soil is 185 kN/m^2. The coefficient of friction between the base and the soil is 0.45. Use M20 grade of concrete and Fe 415 steel.

5. Design a roof dome top ring beam of an over head tank of capacity 600 kL.
The materials used are M20 concrete and HYSD steel. Sketch the details of reinforcement.

6. Design the sidewalls of a rectangular reinforced concrete water tank of interior dimensions 5m × 2m with the depth of storage water being 2m. Adopt M20 grade concrete Fe 415 grade steel. Sketch the details of reinforcement.

7. Design an underground rectangular water tank of internal dimensions 6.4 m × 3.0 m × 3.0 m (deep). The tank shall be covered with roof slab. The soil surrounding the tank remains always dry and unit weight and angle of repose are 18 kN/ m^2 and 28° respectively.

8. A post tensioned prestressed concrete beam spanning 12 m and having a cross section of 200 mm × 350 mm is prestressed with a straight cable located at a constant eccentricity of 50 mm. The initial stress in the cable is 1000 N/mm^2 having an area of 320 mm^2. Calculate the percentage loss of stress in the cable using the following data :

Shrinkage strain in concrete = 200×10^{-6}
Friction coefficient for wave effect = 0.0015/m
Slip at anchorage = 1 mm
Relaxation of steel stress = 5% of initial stress
$E_s = 2.1\times10^5$ N/mm^2
$E_c = 0.35\times10^5$ N/mm^2

CODE No.:10BT50103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

ENGINEERING HYDROLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the weather seasons of India with particular reference to Southwest monsoon season.
b) Describe various types and forms of precipitation.

2. a) Describe the principle of working of Symon's non-recording rain gauge with a neat sketch.
b) The average annual rainfalls in cm. at 4 existing rain gauge stations in a basin are 105, 79, 70 and 66. If the average depth of rainfall over the basin is to be estimated within 10**%** error, determine the additional number of gauges needed.

3. A seven hour storm produced the following rainfall intensities (in mm/h) at half an hour intervals over a basin of area of 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 **Ø** -index for the storm.

4. a) What is runoff? What are the factors that affect the runoff from a catchment area?
b) What are the methods of computing run off from a catchment area? Give various formulae stating clearly the area for which each is applicable.

5. a) Explain the procedure of deriving a D-Hr UH from a storm hydrograph.
b) Rainfall of magnitudes 3**.**8 cm and 2**.**8 cm occurring on two consecutive 4-Hr durations on a catchment of area 27 sq.km produced the following hydrograph of flow at the outlet of the catchment. Estimate the rainfall excess and **Ø** -index.

Time from start of Rainfall (hr)	-6	0	6	12	18	24	30	36	42	48	54	60	66
Observed flow (cumec)	6	5	13	26	21	16	12	9	7	5	5	4.5	4.5

6. a) What are the methods of estimating design flood? What are their limitations?
b) Derive the Muskingum routing equation and the expressions for the routing coefficients C_0, C_1, C_2.

7. a) Discuss the significance of stream gauging. Explain the procedure of stream flow measurement by area-velocity method.
b) The following are observed flows from a storm of 3hr duration on a stream:

Time (Hrs):	00.00	06.00	12.00	18.00	00.00	06.00	12.00	
Flow (cumec):	20.00	122.9	265.4	200.8	157.2	120.9	95.4	
Time (hrs)	18.00	00.00	06.00	12.00	18.00	00.00	06.00	12.00
Flow (cumec)	75.4	57.3	45.7	35.3	27.8	24.1	23.4	20.00

Assuming a constant base flow of 20**.**00 cumec, derive a 3 hr UH. The area of the drainage basin is 215 sq.km.

8. a) Explain the terms well losses, specific capacity, specific draw down, well efficiency.
b) Design an open well in fine sand to give discharge of 0**.**005 cumec when worked under a depression head of 3 meters. Take the value of the specific yield for fine sand as 0**.**5m^3/hour per square meter of area, under unit depression head.

CODE No.:10BT50104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

SOIL MECHANICS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Illustrate by schematic diagrams, how the clay minerals Kaolinite, Illite and Montmorillonite are formed.
b) A partially saturated soil sample has a moisture content of 14**%** and bulk unit weight of 20 **kN/m^3**. Given that the specific gravity of solids is 2**.**70, determine the degree of saturation and void ratio. What will be the unit weight of the sample on complete saturation?

2. a) Define the terms : i) liquid limit ii) shrinkage limit iii) relative density iv) toughness index and v) sensitivity.
b) The sieve analysis and consistency limit tests conducted on a sample gave the following results. Percentage passing 4**.**75 mm, sieve = 82, percentage passing 0**.**075 mm, sieve = 9, $\mathbf{D_{10}}$ = 0**.**11 mm, $\mathbf{D_{30}}$ = 0.45 mm, $\mathbf{D_{60}}$ = 1.12 mm, LL = 22**%**, PL = 12**%**. Classify the soil according to Indian Standard Classification system.

3. a) What are the various factors that affect the permeability of a soil?
b) A constant head permeability test was performed on a medium dense sand of diameter 6 cm and height 15 cm. The water was allowed to flow under a head of 60 cm. The permeability of sand was 4×10^{-2} cm/sec.
Determine: i) discharge (cc/min) ii) the seepage velocity assuming the void ratio as 0**.**64.

4. a) Derive Laplace equation starting the assumptions made for a two-dimensional flow through soil mass.
b) A soil profile consists of a sand layer followed by a clay layer. Sand has a thickness of 4**.**5 m. Clay also has a thickness of 4**.**5 m. The water table is situated at a depth of 2 m below the ground surface. Sand has a specific gravity of 2**.**68 and a porosity of 50**%**. Sand above the water table may be assumed as dry. The clay has a saturated unit weight of 19**.**8 kN/m^3. Draw the total, neutral and effective stress diagrams showing the values at the depth of the water table, at the boundary separating the two soils and at the bottom of the clay layer.

5. a) What are the assumptions made in Boussinesq's theory? What are the limitations of Boussinesq's theory?
b) A circular ring footings for an overload water tank carries a load of 1000 kn, whose outer diameter is 3m and inner diameter is 1**.**5m. Determine the induced stress at a depth of 3. One from surface below the centre of the loaded area.

6. a) Describe standard Proctor test and modified Proctor test. How would you decide the type of the test to be conducted in the laboratory?
b) What are the different methods of compaction adopted in the field? How would you select the type of roller to be used?

7. a) Define :
i) preconsolidation pressure ii) compression index
iii) degree of saturation iv) coefficient of consolidation.

b) The liquid limit of a normally consolidated clay sample is 58**%**. At a stress of 100 kN/m^2, the void ratio is 1.05. Calculate the void ratio if the stress is increased to 200 kN/m^2. If the clay layer thickness is 5 m, what is the total settlement?

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 150 kN/m^2 in an unconfined compression test. The failure plane makes an angle of 52**°** with the horizontal. Calculate the cohesion and angle of internal friction of the soil.

CODE No.:10BT50105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

ENGINEEING GEOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define Engineering Geology, Geophysics, Structural Geology, Hydrogeology and add a note on their significance in civil engineering.
b) Define processes of Chemical Weathering with examples.

2. Write Physical properties of the following minerals:
i) Quartz ii) Biotite iii) Talc iv) Magnetite v) Graphite

3. Examine the classification of 'Igneous rocks' based on depth of formation with suitable examples and add a note their structures.

4. What is Strike and Dip? Elucidate the classification of folds with neat sketches.

5. Write about two important seismic reflection and refraction technique procedures and its applications in Civil Engineering.

6. Describe about gravity and magnetic methods and its uses in geological applications.

7. What are Dams and how are they classified? Discuss fully the geological investigations for an arch dam.

8. Draw the neat sketch of Traffic tunnel and label its parts. Write about head race and tail race pressure tunnels.

CODE No.:10BT50201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

POWER ELECTRONICS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain transfer and output characteristics of MOSFET.
b) Explain briefly the basic theory of operation of SCR.

2. a) Draw and explain the equivalent circuit and V-I characteristics of the UJT in detail.
b) Five thyristors, each of 500Vand 500A are used in series and parallel of 2kv and 1.8kA. Calculate voltage and current derating factors.

3. a) Write a short notes on protections schemes against dv/dt and over voltages.
b) A SCR circuit operates from 300V dc supply has series inductance of 4μH. A resistance of 4Ω and capacitance of 0.2μF is connected across the SCR. Calculate the safe dv/dt and di/dt ratings.

4. a) Explain in detail the effect of freewheeling diode. Also justify the statement "free wheeling diode improves the power factor of the system".
b) A **dc** battery is charged through a resistor 'R' as shown in figure. Derive an expression for the average value of charging current in terms of E_m, E_b, R etc. on the assumption that SCR is fired continuously.
i) For an a.c. source voltage of 230 V, 50 Hz, find the value of average charging current for R=5Ω and E_b=150 V.
ii) Find the power supplied to the battery and that dissipated in the resistor.
iii) Calculate the supply power factor.

5. A three-phase semi converter bridge converter is connected to three-phase AC supply of 400V, 50Hz and operates with a firing angle of 45°. The load current is maintained constant at 9A and the load voltage is 360V. Determine:
i) source inductance ii) load resistance iii) overlap angle.

6. Explain the operation of a single-phase AC voltage regulator with RL load when $\alpha \leq \phi$ and hence show that for $\alpha \leq \phi$ output voltage of AC voltage regulator cannot be regulated.

7. Explain the principle of operation of step-up chopper and also derive output voltage.

8. a) Explain Bi-polar PWM full-bridge inverter with relevant waveforms.
b) A single-phase bridge inverter is supplied from 220V DC voltage and has a load of 7Ω resistance and 20mH inductance. The output frequency of inverter is 50Hz. Determine the steady-state power delivered to the load for square wave operation.

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CODE No.:10BT50202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

AC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive from first principles, the EMF equation of 3-phase alternator.
b) Alternator which runs at 1200 rpm having flux per pole of 0.1Wb sinusoidal distributed. Its stator has 54 slots having double layer winding. Each coil has 8 turns and the coil is chorded by 1 slot .

2. a) What is armature reaction? Explain the armature reaction for different power factor of loads.
b) A star connected 3-phase alternator has an induced **emf** of 400 V between the lines. Due to the presence of third harmonic component, the phase voltage is 244 V.
i) Find the value of third harmonic voltage in the machine.
ii) A 3 - phase 10 ohm resistance connected in star are connected across the lines with neutrals tied together. Find line current.

3. a) Briefly explain the Potier triangle method of finding the voltage regulation.
b) A 5 KVA, 220 V star connected 3 phase salient pole alternator with direct and quadrature axis reactance's of 12 Ω and 7 Ω respectively, delivers full load current at UPF. Calculate the load angle and excitation voltage neglecting resistance.

4. a) In what respect is the operation of an alternator on infinite bus bar different from parallel operation of two alternators? What is the effect of change in excitation and change in mechanical power input on operation of an alternator on infinite bus?
b) The speed regulation of two 500 KW alternators A and B running in parallel are 100**%** to 104**%** and 100**%** to 105**%** from full load to no load respectively. How will the two alternators share a load of 800 KW and also find the load at which one machine ceases to supply any portion of the load?

5. a) Explain the different methods used for starting of synchronous motor.
b) What is a synchronous condenser? With a phasor diagram, explain the capacity of synchronous condenser supplying mechanical load.

6. a) Draw a typical torque - speed curve of a one - phase induction motor on the basis of double revolving field theory.
b) A 220 V, 50 HZ, 4-pole, one-phase induction motor has rotational losses of 15 W and the following parameters:
r_1 = 2.6 ohm, x_1 = 5.0 ohm, x_0 = 96 ohm, r''_2 = 6.4 ohm, x''_2 = 4.4 ohm
Find input current, p.f., output and efficiency at a slip of 4%.

7. a) Explain the principle and operation of AC Series motor also draw its typical characteristics.
b) A universal motor has a resistance of 20 ohm and total inductance of 0.5 H. It runs at 2400 rpm, taking 1A from 230 V **dc** mains. Find the speed and power factor, if it is fed from 230 V **ac** mains and takes 1A.

8. Explain following:
i) Synchros ii) Servomotors iii) Applications of stepper motor

CODE No.:10BT50203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

ELECTRICAL POWER TRANSMISSION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Choose the transformer ratings as base values, prove that the equivalent impedance of a transformer in PU system referred to the LV and HV sides are same.
b) A 10 MVA, 10KV equipment has an impedance of 1Ω but new base values are choosen as 20MVA, 5KV, find its new (i) P.U impedance (ii) **%** impedance

2. a) Obtain the relation between the sending end and the receiving end voltages and currents of a medium line using nominal $\prod$- representation. Draw the equivalent circuit and vector diagram.
b) A3-phase, 50Hz, overhead transmission line, 100 km long has 110 KV between lines at the receiving end has the following constants:

Resistance/km/phase = 0.153 ohms;
Inductance/km/phase = 1.21/mH;
Capacitance/km/phases = 0.00958μF.

The line supplies a load of 20 MW at 0.9 p.f. lagging.
Calculate, using nominal $\prod$- representation the following:
i) Sending end line voltage and sending end current,
ii) Sending end power fact,
iii) Percentage regulation and efficiency of the line.

3. a) Explain the skin and proximity effects on resistance of solid conductors.
b) A 3-φ , 220 KV, 50 Hz transmission line has equilateral triangular spacing of 2m side. The conductor diameter is 3.0 cm. The air density factor and surface irregularity factor are 0.95 and 0.83 respectively. Find critical disruptive voltage and corona loss per kilometer.

4. Derive the expression for characteristic impedance (Z_C) Hint: [$Z_C = \sqrt{\frac{l}{c}}$ *and* $\sqrt{\frac{z}{y}}$]

5. What is attenuation constant and wave length write short notes on each of them?

6. What are the types of insulators and write the advantages and disadvantages of suspension type insulators?

7. a) Derive the expression for sag when the supports are at unequal heights.
b) Explain how stringing chart is useful in erecting the transmission line.

8. a) By mean of a diagram describe how inner sheath grading is provided in underground cables.
b) A cable has been insulated with two insulating materials having permittivity of 4 and 2.5 respectively. The inner and other diameters of the cable are 2.2 cm and 7 cm. If the dielectric stress is 40 KV / cm, calculate the radial thickness of each insulating layer and the safe working voltage of the cable.

CODE No.:10BT50301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

THERMAL ENGINEERING - II

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Steam at a pressure of 15 bar and 300^0c is delivered to the throttle of an engine. The steam expands to 2 bar when release occurs. The steam exhaust takes place at 1.1 bar. A performance test gave the result of the specific steam consumption of 12.8 kg/kw h and mechanical efficiency of 80 percent. Determine: **i)** Ideal work or the modified Rankine engine work per kg
ii) Efficiency of the modified Rankine engine or ideal thermal efficiency.
iii) The indicated and brake work per kg
iv) The brake thermal efficiency
v) The relative efficiency on the basis of indicated work and brake work.

b) State the advantages of regenerative cycle/simple Rankine cycle.

2. a) Explain with neat sketches the construction and working of any two high pressure boilers.

b) How much air is used per kg of coal burnt in a boiler having chimney of 32.3 m height to create a draught of 19 mm 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) Steam at a pressure of 11.8 bar and at 220°C is discharges through convergent divergent nozzle to a back pressure a 1.18 bar. The mass flow rate is 16.45 kg/kW h. If power developed is 184 kW. Determine i) Number of nozzle required if throat diameter is 7 mm.
ii) Exit diameter and velocity.
The 8**%** enthalpy loss is in divergent part only.

b) Explain the terms related to convergent divergent nozzle:
i) Shock ii) Overexpansion iii) Under expansion.

4. a) Derive the expression for maximum blade efficiency in a single stage impulse turbine.

b) Enumerate the energy losses in steam turbine.

5. Write the assumptions in derivation of maximum efficiency condition of reaction turbine. And derive condition for maximum efficiency of reaction turbine with neat relevant sketches.

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) A turbojet engine is travelling at 920 km/h at standard sea level conditions. The ram efficiency is 0.87 and compression ratio is 4.3, the compressor efficiency is 0.82 and the burner pressure loss is 2**%**. The air fuel ratio is 0.0119, the turbine inlet temperature is 950° K, the turbine efficiency is 0.83 and equivalent nozzle efficiency is 0.96.
Calculate i) the specific gross thrust and ii) the thrust specific fuel consumption.

b) Define and derive the specific impulse and propulsive efficiency of rocket engine.

8. a) A turbojet engine is being used to propel an aeroplane with the drag of 3900 N and the coefficient of drag is 0.01835. The wing area is 21.25 m^2, the air consumption per second of the engine is 14.5 kg/s and thrust developed is 8900 N. Calculate the flight velocity, effective jet velocity and specific thrust.

b) Discuss the advantages and limitations of liquid propellant rockets over solid propellant rockets.

CODE No.:10BT50302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

DYNAMICS OF MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. The ratio of the connecting rod length to crank length for a vertical petrol engine is 4**:**1. The bore/stroke is 80/100 mm and mass of the reciprocating parts is 1 kg. The gas pressure on the piston is 0**.**7 N/mm^2 when it has moved 10 m from T.D.C. on its power stroke. Determine the net load on the gudgeon pin. The engine runs at 1800 rpm. At what engine speed will this load be zero?

2. a) Derive an expression for gyroscopic couple.
b) An aeroplane makes a complete half circle of 60m radius to the left when flying at 200 Kmph. The rotary engine and the propeller of the aeroplane weigh 4000N with a radius of gyration 30 cm the engine runs at 2500rpm CW, when viewed from rear. Find the gyroscopic couple on the aircraft and state its effect on it. Show gyroscopic effect by a sketch.

3. a) What is clutch? Make a sketch of single-plate clutch and describe its working.
b) What is brake? What is the difference between a brake and a clutch?

4. a) Differentiate between flywheel and governor.
b) The turning moment diagram for a multi cylinder engine has been drawn to a scale of 1mm = 4500 N-m vertically and 1mm = 2**.**4**°** horizontally. The intercepted areas between output torque curve and mean resistance line taken in order from one end are 342, 23, 245, 303, 115, 232, 227, 164mm^2, when the engine is running at 150rpm. If the mass of the flywheel is 1000kg and total fluctuation of speed does not exceed 3% of the mean speed, find the minimum value of the radius of gyration.

5. a) When Hartnell governor is said to be i) stable ii) unstable and iii) 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 160rpm and 175rpm. Each ball has a mass of 2kg. Find the spring stiffness and the initial compression of the central spring.

6. a) Why two planes are considered for balancing of several masses rotating in several planes?
b) A three cylinder radial engine driven by a common crank has the cylinders spaced at 120**°**. The stroke is 125mm, length of the connecting rod 225mm and the mass of the reciprocating parts per cylinder 2kg. Calculate the primary and secondary forces at crank shaft speed of 1200 rpm.

7. a) Define terms i) transmissibility ii) logarithmic decrement.
b) A steel shaft 100 mm in diameter is loaded and supported in shaft bearings 0**.**4m apart**.** The shaft carries three loads: first mass of 12 kg at the centre, second mass of 10 kg at a distance 0**.**12 m from the left bearing and third mass of 7 kg at a distance 0**.**09 m from the right bearing. Find the value of the critical speed by using Dunkerley's method.

8. Discuss in detail vibration measuring instruments.

CODE No.:10BT50303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

MACHINE TOOLS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Sketch and explain the geometry of a single point cutting tool.
b) What is tool life? Discuss Taylor's tool life equation and the factors affecting the tool life.

2. a) Give the specifications of a lathe and explain thread cutting operation.
b) Distinguish between 3 jaw and 4 jaw chuck and discuss any two lathe accessories.

3. a) Describe the operation of the quick return motion in a mechanical shaper.
b) A shaper is used for shaping a plane surface of 30×250 mm with a cutting speed of 60 m/min and feed of 0.6 mm per stroke. Calculate the machining time and material removal rate if the depth of cut is 3 mm.

4. a) Draw the nomenclature of twist drill and explain various elements on it.
b) Explain with the help of a neat sketch Jig boring machine.

5. a) How do you specify a milling machine and explain various milling cutters used in milling operations.
b) Briefly explain compound indexing and differential indexing.

6. a) What are the various types of grinding machines? Give the applications of each variety of grinding machines.
b) Describe the dressing and balancing requirements in grinding.

7. a) With the help of neat sketch, discuss the working of a continuous surface broaching machine.
b) Draw the sketch of honing tool and explain the working principle.

8. a) How are the jigs classified? Give the broad classification of drilling jigs.
b) Explain the advantages and limitation of jigs and fixtures.

CODE No.:10BT50304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

DESIGN OF MACHINE ELEMENTS - I

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With a neat flowchart, explain the general procedure in machine design.
b) According to Indian Standard Specifications, explain the meaning of the following designations used for steels:
i) Fe E 290 ii) 40C8

2. a) Where do you use maximum shear stress theory of failure? How will you find out allowable stress for brittle parts using factor of safety?
b) The stresses induced at a critical point in a machine component made of steel 45C8 (S_{yt}=380N/mm^2) are as follows. σ_x= 100N/mm^2, σ_y= 40N/mm^2 and σ_{xy} = 80 N/mm^2. Calculate the factor of safety by the maximum normal stress theory.

3. A shaft of diameter 50mm is to be subjected to a torque that varies from **-1.0** kN.m to 2.0 kN.m . Calculate the factor of safety, if the endurance limit and the yield point are, respectively, 150 MPa and 300 MPa.

4. Design a double riveted single cover butt joint to connect to plates of thickness 8mm. The permissible stresses in tension, shear and crushing are, respectively, 75 MPa, 50 MPa and 125 MPa.

5. a) What is a bolt of uniform strength? Give sketches.
b) The cylinder head of an air compressor is held in position by steel stud bolts. The cylinder bore is 400mm in diameter and the maximum pressure is 0.75MPa. Assuming that no packing material is necessary, determine the number and size of the stud bolts to be used. The permissible tensile stress may be taken as 250MPa.

6. a) What is cotter joint? Explain with the help of a neat sketch, how a cotter joint is made?
b) Design a knuckle joint to transmit 150 kN. The design stresses may be taken as 75 MPa in tension, 60 MPa in shear and 150 MPa in compression.

7. a) What is 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 replace 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) Classify different types of keys and draw neat sketch of gib head key and saddle key showing all the proportions.
b) Design and draw a protective type of C.I flange coupling for a steel shaft transmitting 15 kW at 200 rpm and having an allowable shear stress of 40 MPa. The working stress in the bolts should not exceed 30 MPa. Assume that the same material is used for shaft and key and that the crushing stress is twice the value of its shear stress. The maximum torque is 25% greater than the full load torque. The shear stress for C.I is 14 MPa.

CODE No.:10BT50305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

INDUSTRIAL ENGINEERING AND MANAGEMENT

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the functions of management.
b) Explain Fayol's principles of scientific management.

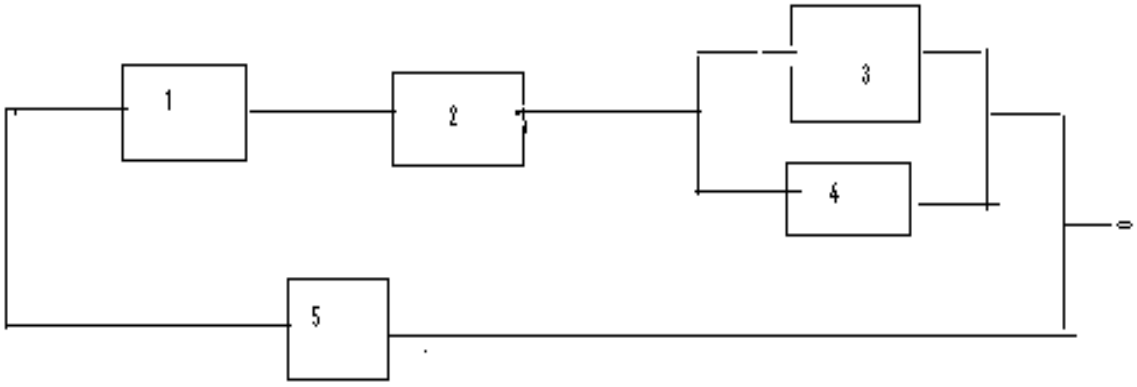
2. List out and describe in brief factors to be considered to establish an automobile manufacturing unit.

3. a) List out objectives of Materials Management.
b) Discuss in brief functions of Purchase officer.

4. a) Describe basic principles of Value analysis.
b) Draw a schematic diagram of responsibilities of a purchase officer.

5. a) Explain Fishbone diagram with a neat sketch.
b) Explain double sampling plan indicating as to how it is superior to single sampling plan.

6. a) Explain various steps involved for developing a Preventive Maintenance program.
b) Derive a general expression for the unreliability of the model shown below and hence evaluate the unreliability of the system if all the components have a reliability of 0.8.



7. Discuss in detail about the essence and salient features of ethics to be followed in engineering profession.

8. Discuss in detail functions of HRM.

CODE No.:10BT50401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

ANALOG COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the need for modulation and various types of continuous wave modulations.
b) Explain the detection of AM wave using square law detector.

2. a) Give the time domain and frequency domain representation of DSB-SC wave.
b) Explain quadrature null effect in detail.

3. a) Explain the frequency discriminator method of generation of SSB.
b) Derive the expression for a VSB modulated wave containing a vestige of the upper sideband.

4. a) State Carson's Rule.
b) Explain the FM demodulation using PLL.

5. a) Derive the figure of merit for SSB-SC.
b) Explain the threshold effect in AM.

6. a) Explain the AM transmitter (low level) .
b) Write the applications where the FM transmission is needed.

7. a) Explain super heterodyne receiver type for AM.
b) Explain the working of AGC.

8. a) Explain the generation of PWM using appropriate method.
b) Define multiplexing and explain concept of TDM.

CODE No.:10BT50402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

ANTENNAS AND WAVE PROPAGATION

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain and prove any two antenna theorems.
b) Compute the value of solid angle in square degrees in the case of a spherical surface of radius r meters between elevation angles θ=30°, θ=45°, azimuthal angles φ=60° and φ=90°.

2. a) A horizontal infinitesimal electric dipole of constant current I_o is placed symmetrically about the origin and directed along x-axis. Derive the;
i) Far-zone fields radiated by the dipole.
ii) Directivity of the antenna.
b) Sketch and comment on the current distributions and the principal plane patterns of vertical antennas of length $\lambda/2, \lambda, 3\lambda/2, 2\lambda$.

3. Three isotropic sources with spacing **d** between them are placed along the **z**-axis. The excitation coefficient of each outside element is unity while that of the center element is **2**. For a spacing of $\mathbf{d=\lambda/4}$ between the elements, find the;
i) Array factor.
ii) Angles(in degrees) where the nulls of the pattern occur $\mathbf{(0° \leq \theta \leq 180°)}$.
iii) Angles(in degrees) where the maxima of the pattern occur $\mathbf{(0° \leq \theta \leq 180°)}$.

4. a) What is monofilar axial mode helical antenna? Discuss its theory in detail.
b) Design a Yagi-Uda array having five elements operating at 250 MHz.

5. a) Compare active and passive corner reflectors. What are retro reflectors?
b) Calculate the diameter and effective aperture area of a parabolic reflector required to produce a beam-width of 15° between first nulls at a frequency of 10GHz.

6. a) With neat setup, explain the absolute method of measuring the gain of an antenna.
b) Discuss Dielectric and Metal Lens Antennas and their applications.

7. a) Explain the effect of earth's magnetic field and curvature on the radio wave propagation.
b) What is the radio horizon of a television antenna placed at height of 166 meters? If the signal is to be received at a distance of 66 km, what should be the height of the receiving antenna?

8. a) Give the summary of wave characteristics in different frequency ranges.
b) Draw the structure of ionosphere layer and explain in detail.

CODE No.:10BT50403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operation of a cascade differential amplifier.
b) Derive the voltage gain of a dual input unbalanced output differential amplifier.

2. a) Define CMRR. Obtain expression for CMRR.
b) Determine the output voltage of an op-amp for the input voltages of $V_{in\,1} = 150\mu v$, $V_{in\,2}=140\mu v$. This amplifier has a differential gain of 4000 and the value of CMRR is 100 and for 10^5.

3. a) Describe how an op amp can be used as on instrumentation amplifier in detail.
b) Construct a circuit to realize $V_{out} = 10\ V_1 + 20\ V_2 - 5\ V_3$.

4. a) What do you mean by a precision rectifier?
b) Explain the working of a full wave rectifier using *opamp*.

5. a) Distinguish between passive and active filter.
b) Design a Fourth order HPF at Low cut-off frequency of 1KHz.

6. a) Explain the working of PLL with the help of its block diagram.
b) For a free running oscillator using IC555, for $R_A = 6.8\ k\Omega$, $R_B = 3.3\ k\Omega$ and $C = 0.5\mu f$, calculate i) t_{high} ii) t_{low} iii) duty cycle and iv) oscillation frequency.

7. a) Explain the following terms with respect to ADC.
i) Full scale range ii) Quantization error iii) Conversion time.
b) Draw the Schematic of a DAC. Draw and explain the working principle of a weighted-resistor DAC.

8. a) Explain a basic multiplier and its characteristics.
b) Explain the performance parameters of the multiplier.

CODE No.:10BT50404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is the difference between transmission time and propagation delay? Explain these two parameters with reference to CMOS logic.
b) Explain in detail about CMOS steady state electrical behavior.

2. a) Draw the circuit diagram of basic TTL NAND gate and explain the operation with the help of function table.
b) Explain about DC noise margin and low-state unit load with reference to TTL gate.

3. a) Explain VHDL design flow.
b) Explain various data types supported by VHDL. Give the necessary examples.

4. a) Explain concept of packages in VHDL.
b) Explain about design flow in VHDL.

5. a) Design a 2-digit BCD adder with logic gates. Using this logic write VHDL program using structural model.
b) Write VHDL code for 74x280 parity generator.

6. a) Design a barrel shifter for 8-bit using three control inputs. Write a VHDL program for the same in data flow style.
b) Write a behavioral VHDL program to compare 16-bit signed and unsigned integers.

7. a) Distinguish between latch and flip-flop. Show the logic diagram for both. Explain the operation with the help of function table.
b) Design a Mod-12 ripple counter using 74x74. Write VHDL code for this using data flow style.

8. a) Explain the necessity of two-dimensional decoding mechanism in memories.
b) With the help of timing waveforms, explain read and write operations of SRAM.

CODE No.:10BT50421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

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) Prove that the electric field intensity at any point in free space due to a infinite line charge with a charge density ρ_L C/m is given by $E = \rho_L / (2\pi\varepsilon_0\rho)\, a_\rho$, where $\boldsymbol{\rho}$ is the radial distance from the line charge to the point of interest.

b) Three point charges 1mC, -2mC, 3 mC are respectively located at (0, 0, 4), (-2, 5, 1) and (3, -4, 6). Find the potential V_P at P (-1, 1, 2). Also calculate the potential difference V_{PQ} if Q is (1, 2, 3).

2. a) Define and distinguish between the terms electric field, electric displacement and electric flux density with necessary mathematical relations.

b) Derive the expression for capacitance of the spherical condenser.

3. a) What is magnetic dipole? Determine magnetic field at any point P in a free space due to a magnetic dipole.

b) A small current loop L_1 with magnetic moment 5 $\mathbf{a_z}$ $\mathbf{A/m^2}$ is located at the origin while another small loop current L_2 with magnetic moment 3 $\mathbf{a_y}$ $\mathbf{A/m^2}$ is located at (4, -3, 10). Determine the torque on L_2.

4. a) Express all the Maxwell's Equations in various forms and give their word statement.

b) What do you mean by inconsistency in Ampere's law? Explain with suitable derivation.

5. a) Derive wave Equations for source free regions.

b) Explain the terms linear polarization, circular polarization and elliptical polarization.

6. a) Derive power Poynting theorem.

b) Using Snell's law, explain oblique incidence of a plane wave on dielectric.

7. a) Differentiate Inter and Intra Electromagnetic Interference.

b) Explain the effects of Electromagnetic Interference.

8. Write short notes on:

i) Bonding

ii) Grounding

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

LINEAR AND DIGITAL IC APPLICATIONS

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Present the various IC classifications according to the number of components integrated on to the chip.
b) Define the terms input offset voltage, thermal drift, error voltage, noise and CMRR and give their significance in practical circuits.

2. a) Write a short note on the following applications of operational amplifier.
i) Integrator ii) Differentiator
b) With a neat circuit diagram derive the expression of closed loop gain of an inverting amplifier.

3. a) Design a monostable multivibrator using 555 timer to get a pulse width of 0.1msec. Draw the circuit diagram and relevant waveforms.
b) Draw and explain the block diagram of PLL.

4. a) Design, draw and explain CMOS transistor circuit for 2-input NAND gate with its function table.
b) Design a CMOS transistor circuit which is having the following functional behavior.
$f(Z) = \overline{A.(B + C)}$.

5. a) Draw the circuit diagram and explain the working of TTL inverter with tristate output.
b) Draw the circuit of CMOS NOR gate and explain its operation. Mention the advantages of CMOS over other digital logic families.

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) Explain about multiplexers. Design and explain the working of a 4 × 1 MUX.
b) Design an 8421 to gray code converter.

8. a) Design a 4-bit LFSR using flip-flops and associated logic. List out all states with initial state as 0101.
b) Design an 8-bit parallel-in and parallel-out shift register and explain the operation.

CODE No.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

PRINCIPLES OF COMMUNICATIONS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Plot the convolution of a function f(t) with a pair of impulses.
b) Prove the Time shifting and Duality properties using Fourier transform.

2. a) Explain DSB-SC generation using balanced modulator using two diodes.
b) Verify that the modulation efficiency in AM, under sinusoidal tone modulation is 33%.

3. a) Derive the expression for wide band FM wave.
b) Explain about transmission bandwidth. Define deviation ratio.

4. a) Differentiate between PAM, PWM and PPM.
b) Explain the generation of PPM with neat sketches.

5. a) What is Delta modulation and compare it with PCM?
b) Explain with neat block diagram Adaptive Delta Modulator Transmitter and Receiver.

6. a) Draw the block diagram of QAM and explain.
b) Write short notes on PSK.

7. a) State and prove the properties of entropy.
b) A zero memory source emits six messages with probabilities 0.3, 0.25, 0.15, 0.12, 0.1 and 0.08. Find its i) Average and length ii) The efficiency
iii) Redundancy using Huffman coding.

8. a) A (7,4) block code is generated by using a generator matrix G

$$G = \left[\begin{array}{cccc:ccc} 1 & 0 & 0 & 0 & 1 & 1 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 & 0 & 1 & 1 \end{array}\right]$$

Find the following:
i) Parity check matrix
ii) Code vectors for a message block (1001) and (1110)
iii) Show how a single error can be corrected.
b) Define minimum distance of a code word and weight of the code words.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

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) Define an algorithm and describe the characteristics of an algorithm.
b) What are different types of asymptotic notations used to represent time complexity? Explain.

2. a) Explain Spanning trees.
b) Explain the differences between BFS and DFS.

3. a) Explain the working of binary search algorithm using divide-and-conquer with an example.
b) Explain the quick sort algorithm for the list: 35, 28, 59, 21, 49, 62, 11, 18, 93.

4. a) Discuss the general method of Greedy algorithm.
b) Consider n=7, m=15 $(p_1, p_2, \ldots p_7) = (10, 5, 15, 7, 6, 18, 3)$ and $(w_1, w_2, \ldots w_7) = (2,3,5,7,1,4,1)$. Obtain the optimal solution for this Knapsack instance.

5. Explain briefly two applications of Dynamic programming.

6. a) Explain the recursive Backtracking algorithm.
b) What is graph coloring? Write an algorithm which finds m-coloring of a graph.

7. a) What do you mean by branch and bound method of problem solving? Explain with suitable example.
b) Solve the following instance of the Knapsack problem by the Branch-and-Bound algorithm, with W = 16.

Item	Weight	Value
1	10	100
2	7	63
3	8	56
4	4	12

8. a) Explain the strategy to prove that a problem is NP hard.
b) What is meant by halting problem explain with an example?

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

MICRO-PROCESSOR AND INTERFACING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Give the 8085 compatible flags of 8086 processors .Discuss the design of each flag.
b) Discuss the addressing modes provided by 8086 and explain with examples.

2. a) Explain the following 8086 instructions with examples.
i) MUL ii) IMUL III) DIV iv) IDIV
b) Write an assembly language program to find the maximum from an array of 10 numbers.

3. a) Draw and discuss the typical minimum mode operation in 8086.
b) With neat diagram explain the architecture of the 8257.

4. Write an assembly language program to rotate 200 teeth, 4 phase stepper motor as specified below.
i) Five rotations clockwise and then five rotations anticlockwise.
ii) Rotate through angle 135° in 2 sec
iii) Rotate the shaft at a speed of 10 rotations per minute.

5. a) Explain the block diagram of 8259 PIC.
b) Describe an interrupt request response of an 8086 system.

6. a) Explain the mode instruction control word format of 8251.
b) Draw and discus the synchronous mode transmit and receive data formats of 8251.

7. a) Briefly explain about the concept of paging in 80386 processor.
b) Explain how instruction execution speed is increased with Branch prediction algorithms in Pentium.

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) Regular/Supplementary Examinations November - 2014

DATABASE MANAGEMENT SYSTEMS

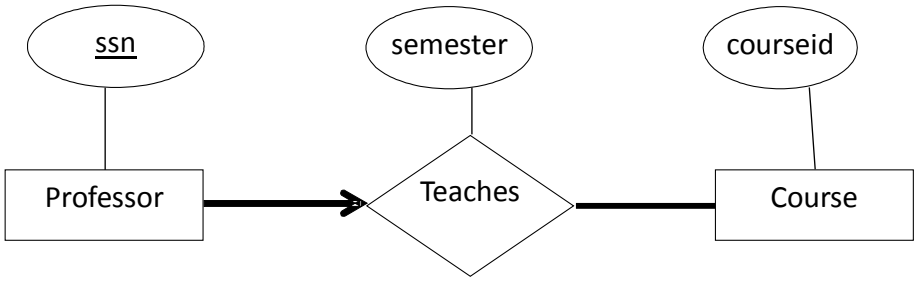
[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List the responsibilities of DBA.
b) Discuss the different types of data models.

2. a) List the entity sets and their primary keys of the following diagram:



b) Discuss about ternary relationship.

3. a) What is the difference between tuple relational calculus and domain relational calculus?
b) Explain with suitable example different join operations exist in relational algebra.

4. Write the SQL expressions for the following relational database?

sailor schema (sailor id, boat id, sailorname, rating, age)
reserves (sailor id, boat id, day)
boat schema (boat id, boatname, color)

i) Find the age of the youngest sailor for each rating level.
ii) Find the age of the youngest sailor who is eligible to vote for each rating.
iii) Level with at lead two such sailors.
iv) Find the number of reservations for each red boat.
v) Find the average age of sailor for each rating level that at least 2 sailors.

5. a) Explain multivalued dependencies.
b) Explain 1NF , 2NF and 3NF with functional dependency diagram.

6. a) Describe the concept of serializability with suitable example.
b) Write short notes on implementation of Atomicity and Durability.

7. a) Explain log based recovery.
b) Explain time stamp protocol.

8. Mention the purpose of indexing. How this can be done by B+ tree? Explain.

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CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

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) State and explain different operating system services.
b) Explain with suitable diagram layered and monolithic operating system structures.
c) State uses of system calls.

2. Define Thread. Differentiate user thread and kernel thread. What are the different multithreading models? Explain about threading issues.

3. What is a Semaphore? Explain how semaphores are used to solve n process critical section 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 allocation space for files on secondary storage to real storage allocation under variable partition programming.

7. a) Write short notes on DMA.
b) Write a note on transforming I/O to hardware operations.

8. a) How can the access control rights among users implemented?
b) What is cryptography?
c) Explain its role as an effective security tool.

CODE No.:10BT51001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2014

PROCESS CONTROL INSTRUMENTATION

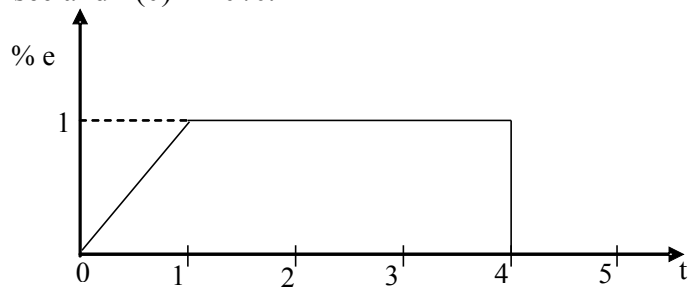
[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss in detail about characteristics and mathematical model of a gas process.
b) Explain in detail about i) Degrees of freedom ii) Self regulation.

2. a) i) Differentiate differential gap and proportional band.
ii) The pure capacitive process is controlled by proportional controller. When there is a step change in the set point with amplitude of two. Determine the value of offset in the controlled output.
b) Plot the response of the PD controller for the error signal shown in figure.
If $K_C = 5$, $\tau_D = 0.5$ sec and P(0) = 20%.



3. a) Explain the principle of operation of hydraulic PI controller.
b) Explain the operation electronic PD controller.

4. Illustrate with relevant graphs the following methods of optimum settings from the plant response.
i) Damped oscillation method ii) Reaction - curve method

5. a) Explain the principle of pressure to current converter with necessary diagram.
b) Draw the construction and explain the working principle of solenoid operated actuator.

6. a) Explain in detail about control valve sizing.
b) List different types of valves and elaborate on diaphragm valve.

7. a) Identify a control scheme which requires one measurement and provides more than one manipulation. Explain it with an example.
b) Derive the general expression for $G_C(s)$ and $G_{SP}(s)$ of feed forward controller.

8. a) Write short notes on distillation process.
b) Explain a control scheme of binary distillation column.

CODE No.:10BT51002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

INDUSTRIAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe any one method of measurement of Roughness with a neat diagram.
b) Explain Electrical Comparators with necessary diagrams.

2. a) Explain the principle of velocity measurement by electrical differentiation of displacement voltages.
b) Write short notes on strain gauge based torque measurement.

3. a) Explain the testing and calibration of pressure gauges using Dead Weight tester.
b) Explain the principle and operation of McLeod and Ionization gauge.

4. a) Explain how ultrasonic flow meters are measuring the flow rate.
b) Explain the working of hot-wire anemometer for flow measurement with relevant sketches.

5. a) Explain the principle and operation of Industrial Viscometer and list their applications.
b) Explain the principle and working of Load cell and Air pressure balance method.

6. a) What are the factors that affect the performance of resistance thermometer? Explain.
b) Why is a cold junction compensation necessary in temperature measuring schemes using thermocouples? What is the recent trend in making such compensation?

7. a) Write short notes on float type level gauges.
b) Describe the capacitance type level gauging.

8. a) Explain capacitive accelerometer design in detail.
b) Write short notes on various types of microphones.

CODE No.:10BT51201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

SOFTWARE ENGINEERING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) The Capability maturity model is used by many companies as an incentive to implement new practices. That is, organizations set goals and reward behaviour to help them move up from level 1 toward level 5. What kinds of measurable goals can be set for each of the process areas? How can those measures are used to track progress toward level 5.
b) The "myths' you studied are slowly fading as the years pass, but others are taking their place. Add three new myths to each category and describe them with appropriate examples.

2. a) With neat diagram explain one element of the concurrent process model.
b) What is agility? List and explain 7 principles to achieve agility.

3. a) Explain requirement elicitation and analysis process.
b) What are checks that should be carried out during requirement documentation?

4. a) What are the quality guidelines required during design process? Explain.
b) What is software architecture? Why is architecture important? Explain.

5. Identify the use cases and draw a usecase diagram based on the following problem specification concerning an elevator controller system**:**
Each elevator has a set of floor buttons, one for each floor. Any person inside the elevator can press the floor buttons. The buttons illuminate when pressed and cause the elevator to visit the corresponding floor. The illumination is cancelled when the corresponding floor is visited by the elevator. An emergency button can also be pressed, in which case a technician will be called automatically to fix the elevator. The technician can use a key to activate or deactivate the elevator, which deactivates all floor buttons. The basement, because of security reasons, is accessible only by the security officer by using a key that unlocks the basement floor button. All the elevators are controlled by a central/external unit at the reception desk.

6. a) What is the distinction between alpha and beta testing? Explain why these forms of testing are particularly valuable.
b) Explain why top-down testing is not an effective strategy for testing object-oriented systems.
c) One approach, which is commonly adapted to system testing, is to test the system until testing budget is exhausted and then deliver the system to customers? Discuss the ethics of this approach.

7. a) What is meant by black box testing? What are different types of black box testing strategies like, graph based, equivalence partitioning and boundary value analysis?
b) A class X has 10 operations. Cyclomatic complexity has been computed for all operations in the OO system and the average value of module complexity is 4. For class X the complexity for operations 1 to 10 is 5, 4, 3, 3, 6, 8, 2, 2, 5, 5 respectively. Compute the weighted methods per class?

8. Assume that you are responsible for developing a web-based application and in that application you need to prepare the Quality Control (QC) check list for conducting a security testing. In this regard mention the specific items , Responses and Comments that needs to be incorporated in the checklist**.**

CODE No.:10BT51202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

COMPUTER GRAPHICS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the architecture of raster display.
b) How are the different shades of color generated on the RGB monitors?

2. a) Illustrate about coloring the images with proper figures.
b) Clarify lossless and lossy compression methods with appropriate example.

3. a) Describe rubber band methods and dragging.
b) Prove that a uniform scaling (***sx*** = ***sy***) and a rotation form a commutative pair of operations, but that in general, scaling and rotation are not commutative.

4. a) Explain Z-buffer algorithm. List advantages and disadvantages of Z-buffer algorithm.
b) Explain Surtherland-Hodgeman polygon-clipping algorithm.

5. a) List the characteristics of parametric cubic curves.
b) Develop the necessary transformation to magnify the triangle with vertices A(0,0), B(1,1), C(5,2) to twice its size while keeping C(5,2) fixed.

6. a) Derive the perspective projection transformation matrix.
b) Explain the working process of 3D clipping.

7. a) Describe a recursive Flood-fill algorithm.
b) Given 4 control point P_0, P_1, P_2, P_3 express the Bezier curve parametric equation in terms of **t**. Show that the starting slope of the curve is parallel to line P_0, P_1. What do you understand by converse hull of a Bezier curve? Take 4 points and draw the convex hull.

8. a) List and explain about the steps of animation.
b) What are the various types of interpolation used in animation?

CODE No.:10BT51301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

ADVANCED CONTROL SYSTEMS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) A linear time invariant system is described by the following state model.

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} -1 & 0 \\ 0 & -3 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 1 \\ 1 \end{bmatrix} [r] \text{ and } y = [-1 \quad -2] \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$$

Obtain the canonical form of state model.

b) What is Jordan canonical form?

2. a) Derive the necessary conditions to be satisfied for system to be controllable of continuous-time systems.

b) Consider the system given by

$$\dot{X}(t) = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & -0.5809 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 4.4537 & 0 \end{bmatrix} X(t) + \begin{bmatrix} 0 \\ 0.9211 \\ 0 \\ -0.3947 \end{bmatrix} u(t)$$

$$y(t) = [0 \quad 0 \quad 1 \quad 0] X(t)$$

Investigate controllability and observability.

3. What do you understand from the term 'Dead Zone' and Hysterisis? Derive the describing function of relay with the terms mentioned.

4. Construct a phase trajectory by delta method for a non-linear system represented by $\ddot{x} + 4|\dot{x}|\dot{x} + 4x = 0$; choose the initial condition as x(0) = 1.0 and $\dot{x}(0) = 0$.

5. a) Suppose you are given a linear continuous time autonomous system, how do you decide whether a system is globally asymptotically stable?

b) Define positive definite and negative definite with examples.

6. Given the system

$\dot{X} = AX + Bu$ where

$$A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix}, \quad B = \begin{bmatrix} 1 & 0 \\ 0 & 1 \\ 1 & 1 \end{bmatrix}$$

Design a linear state variable feedback such that the closed loop poles are located at -1, -2, and -3.

7. Describe i) Minimum-Energy problem
ii) State regulator problem

8. 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?

$$J = 0.2 \int_0^2 u^2 dt$$

Given $x(0) = \begin{bmatrix} 1 \\ 1 \end{bmatrix}, x(2) = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$

CODE No.:10BT51302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

PROCESS CONTROL

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss in detail about mathematical model of a gas process.
b) Explain in detail about i) Degrees of freedom ii) Self regulation.

2. a) With a neat diagram explain about Cohen-Coon method.
b) Explain with the flow chart a procedure for selecting controllers.

3. a) Discuss in detail about different flow measuring elements.
b) Explain in detail about i) pneumatic transmission ii) electrical transmission.

4. a) Explain with relevant equations, the implementation of the single mode control action with electronic controllers.
b) Describe with a neat sketch, the principle of a force type pneumatic PD controller. Mention the merits of pneumatic controller.

5. a) Describe the Ratio control configuration with an example.
b) Explain the sliding stem control valves.

6. Discuss the following in detail:
i) Condenser vapors
ii) Fired heaters

7. a) Write short notes on stability of exothermic reactors.
b) Explain the principles of governing the conduct of chemical reactions.

8. a) Explain the role of advanced control techniques in a Continuous stirred tank reactor (Chemical Plant).
b) Explain the role of instrumentation and control in nuclear power plants.

CODE No.:10BT51501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

SYSTEM SOFTWARE

[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 steps required to assemble, link and execute a program? Explain.
b) The format for the SEGMENT directive is name SEGMENT align combine 'class'. Explain the purpose of i) align ii) combine iii) 'class'

2. a) Discuss in detail about various loops handling instructions with examples.
b) How can you use shift and rotate instructions for multiplying and dividing double word values? Explain.

3. a) Explain about table processing, searching and sorting operations in keyboard and screen processing.
b) Discuss in detail about advanced screen and keyboard processing interrupt functions.

4. a) What are the directives used in Macro definition? Explain.
b) Discuss macro calls with an example.

5. Describe the following in detail:
i) Conditional macro expansion
ii) MASM macro processor
iii) ANSI C macro language.

6. Explain in detail the features of the MASM assembler for Pentium system.

7. a) Write short notes on Bootstrap loaders.
b) Discuss the design procedure for direct-linking loaders.

8. a) Describe the different features of a Text Editor.
b) Explain with an example the functions of a Debugger.

CODE No.:10BT51502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

OBJECT ORIENTED SOFTWARE ENGINEERING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail how software plays a dual role.
b) What is the significance of process models? Explain Rapid Application Development model.

2. a) Explain the difference between Size Oriented Metric and Functional Oriented Metric with an example.
b) Explain project tracking methods.

3. a) What are the basic building blocks of UML?
b) What do you mean by component? What is the difference between components and classes?

4. a) Discuss various techniques for Requirements Elicitation and Analysis.
b) Write a note of Flow Oriented Modeling.

5. a) Explain the design quality.
b) Explain the architectural styles and patterns used in design engineering.

6. a) Explain about the unit testing and system testing.
b) Explain the black-box and white-box testing with example.

7. Write note on the following:
i) Software risks.
ii) Risk identification.

8. a) Describe the Requirements Elicitation process in Requirements Engineering.
b) Describe the various metrics for software quality.
c) Elaborate: Spiral Model.

CODE No.:10BT52303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2014

BASIC INDUSTRIAL AND ENVIRONMENTAL BIOTECHNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Discuss in detail about ethanol production using fermentation processes and describe the Ethanol history from alcohol to car fuel.

2. What are antibiotics? Explain in detail its classification and how do they work.

3. Write in detail about the commercially important enzymes for the food and pharmaceutical industries.

4. Write a short note on:
   a) Monoclonal antibodies.
   b) Insulin.

5. Write briefly on:
   a) Xanthan Gum and applications.
   b) High -Fructose corn syrup.

6. Write a note on:
   a) Rotating biological contractors (RBC).
   b) Up-flow Anaerobic Sludge Bed reactor (UASB).

7. Explain the constraints and priorities of Bioremediation.

8. Explain the useful methods of Hazardous waste management.

CODE No.:10BT52305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2014

BIOCHEMICAL REACTION ENGINEERING

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Show that the following scheme explains the observed first order kinetics for the decomposition of N_2O_4 :

$$N_2O_4 \underset{k_2}{\overset{k_1}{=}} NO_2 + NO_2^*; NO_2^* \xrightarrow{k_3} NO^* + O_2; NO^* + NO_2^* \xrightarrow{k4} 2NO_2$$

2. After 8 minutes in a batch reactor, reactant (C_{AO} = 1 mol / L) is 80 % converted. After 18 minutes, the conversion is 18 %. Find a rate equation to represent this reaction.

3. Depict the steady state Plug flow reactor and derive the performance equation for PFR.

4. a) Define i) Instantaneous fractional yield & selectivity ii) Overall fractional yield.
b) Resultant A decomposes is an isothermal batch reactor (C_{Ao}= 100) to produce desired R and unwanted S, and the following progressive concentration readings are observed.

C_A	100	90	80	70	60	50	40	30	20	10	0
C_R	0	1	4	9	16	25	35	45	55	64	71

Additional runs show that adding R and S does not affect the distribution of products formed and that only A does. Also it is noted that the total number of moles of A,R and S is constant. Find the ϕ versus C_A curve for this reaction with a feed of C_{Ao}= 100 and C_{Af}= 10 find C_R from a mixed flow reactor and from a plug flow reactor.

5. Define enzyme inhibitor? What are the various categories of inhibition? Explain about substrate inhibition in detail?

6. Explain competitive inhibition and obtain its kinetic representation.

7. a) Obtain the relation between conversion and temperature by making an energy balance for adiabatic operations in flow reactors.
b) Write a brief note on the effect of temperature and pressure on equilibrium conversion as prescribed by thermodynamics.

8. Explain the design procedure of homogeneous reactors under adiabatic conditions.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

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) What are right linear and left linear regular grammar?
b) Explain the decision algorithms of regular Languages.

3. a) Construct NFA for the given Regular Expression $(11 + 0)^* (00 + 1)^*$
b) Check whether the following languages are regular or not
i) $L = \{ a^{2n} | n > 0 \}$ ii) $L = \{ 0^{n^2} | n \geq 1 \}$

4. a) Construct NFA for the following grammar
S → Ab/ab
A→ Ab/Bb
B → Ba/a
b) State whether **L = {$a^n b^n$ | n > 0 }** is regular.

5. a) Simplify the following grammar S → A/0C1, A → B/01/10, C → C0/ Є.
b) Convert the given CFG into GNF S→ **ab**S**b** | **aa**

6. a) Give the formal definition of a Push Down Automata.
b) Construct Push Down Automata to recognize the language of equal number of a's and b's.

7. a) Design a Turing machine to computes ones complement of a binary number.
b) Design a Turing machine that accepts L = {**$0^n 1^n 2^n$**}.

8. a) What is halting problem? Is halting problem solvable?
b) State whether the following grammar is LR(0) grammar.
A → **a**A**a**/B
B → **b**

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

COMPUTER NETWORKS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Write a short notes on the following with suitable diagrams:
   a) Novell Networks.
   b) ISO/OSI reference model.
   c) Internet.

2. a) Explain twisted pair as transmission media.
   b) How the mobile telephone system works?

3. a) Explain the Hamming code with examples.
   b) Write a short notes on HDLC.

4. a) What is multiple access protocol? Explain CSMA.
   b) Write short notes on channel allocation problem.

5. a) Define congestion. How different layers help in controlling congestion?
   b) Give the format of IP header and explain different fields.

6. a) Differentiate between UDP and TCP.
   b) List out the functions of Transport Layer.

7. Explain HTTP. List out the various functions of HTTP protocol.

8. a) Explain Bluetooth with a neat diagram.
   b) Explain the 802.15 network with an example.

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

ENVIRONMENTAL SCIENCES

[Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define environment and explain the necessity of public awareness.
b) Write an essay on biosphere.

2. a) Explain in detail about deforestation.
b) Write a detailed note on food resources.

3. a) Write a short note on producers, consumers and decomposers.
b) Define and explain in detail about ecological pyramids.

4. a) Explain few major threats to Biodiversity.
b) Write an essay on ecological succession.

5. a) Define energy and discuss the energy flow with in the ecosystem.
b) What is a food chain? Describe the different types of food chain.

6. a) Write about Ozone layer depletion.
b) Explain the need and methods of rain water harvesting.

7. a) Write about Wildlife Protection Act.
b) Discuss about environmental ethics and human rights.

8. a) Discuss HIV and Carcinogens on human health.
b) How the Fertilizers and pesticides influence the human health through Biomagnifications?

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

OPTIMIZATION TECHNIQUES

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Briefly explain the classification of Optimization problems.

2. a) Derive the Kuhn - Tucker conditions for general non-linear programming problem.
b) Write the K-T conditions for the following problem and obtain the optimal solution:

Maximize $Z = 10x_1 - 2x_1^2 - x_1^3 - 8x_2 - x_2^2$

Subject to $x_1 + x_2 \leq 2$

$x_1, x_2 \geq 0$

3. Solve the linear programming problem using Simplex method:

Minimize $W = 10x_1 + 6x_2 + 2x_3$

Subject to $-x_1 + x_2 + x_3 \geq 1$

$3x_1 + x_2 - x_3 \geq 2$

$x_1, x_2, x_3 \geq 0$

4. Powerco has three electric power plants that supply the needs of four cities. Each power plant can supply the following numbers of kwh of electricity: plant 1, 35 million; plant 2, 50 million; and plant 3, 40 million. The peak power demands in these cities as follows (in kwh): city 1, 45 million; city 2, 20 million; city 3, 30 million; city 4, 30million. The costs of sending 1 million kwh of electricity from plant to city is given in the table below. To minimize the cost of meeting each city's peak power demand, formulate a balanced transportation problem and determine the optimal solution.

	To			
From	City 1	City 2	City 3	City 4
Plant 1	$8	$6	$10	$9
Plant 2	$9	$12	$13	$7
Plant 3	$14	$9	$16	$5

5. Find the minimum of the junction $\mathbf{f = \lambda^5 - 5\lambda^3 - 20\lambda + 5}$ using Fibonacci search in the interval (0, 5).

6. Perform four iterations of steepest descent method to minimize
$\mathbf{f(x_1, x_2) = x_1 - x_2 + 2x_1^2 + 2x_1x_2 + x_2^2}$, starting point $\mathbf{x_1 = (0,0)}$.

7. Give a proof for the convergence of exterior penalty function method.

8. Solve the following problem using dynamic programming.

Maximize $\mathbf{Z = y_1^2 + y_2^2 + y_3^3}$

Subject to the constraints $\mathbf{y_1 . y_2 . y_3 \leq 4}$; $\mathbf{y_1, y_2, y_3 \geq 0}$ and integers.

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

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

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

Answer any FIVE questions
All questions carry equal marks

1. Define law of demand with the help of illustration.

2. Explain various Economies of Scale.

3. Explain the Price - Output relationship under perfect competition.

4. What is a Joint Stock Company? Explain various features of the Joint Stock Company.

5. Define accounting cycle with examples.

6. From the following draw the balance sheet of ABC Co. as on 31st march 2010. Difference in the balance sheet has to be posted to Suspense A/c.

Creditors	Rs. 35,000	Cash in hand	Rs. 10,000
Debtors	Rs. 25,000	Cash at bank	Rs. 2,000
Bills payable	Rs. 15,000	Fixed assets	Rs. 1,00,000
Net profit of the year	Rs. 25,000	Stock	Rs. 15,000
Bank overdraft	Rs. 2,000	Bills receivable	Rs. 8,000
Provision for taxation	Rs. 10,000	Furniture	Rs. 10,000
Works men compensation fund	Rs. 10,000	loan	Rs. 8,000

7. From the following information find the NPV. Cost of capital is 10%. Cash out flow is Rs.200, 000.

Year	cash in flow
1	Rs.50,000
2	Rs.70,000
3	Rs.90,000
4	Rs.1,00,000
5	Rs.1,20,000

8. Explain Tally features in creating Company and Account Groups.

CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

COMPUTER ARCHITECTURE AND ORGANIZATION

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail about Von-Neumann Architecture.
b) Write short notes on decimal arithmetic operations.

2. a) Explain in detail about different instruction formats.
b) List the various addressing modes. Give a brief explanation of each of them with an example.

3. Explain in detail about micro programmed control.

4. a) Explain four-segment instruction pipe line.
b) Explain the three-segment instruction pipe line.

5. a) Discuss briefly about virtual memory .
b) Give the advantages of the following memories
i) ROM
ii) RAM
iii) E PROM.

6. a) Explain about Input-Output processor (IOP).
b) Explain about IEEE1394.

7. a) Explain about Inter-processor Arbitration.
b) Explain shared memory multiprocessor.

8. Explain RISC architecture in detail.

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

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. a) Obtain the transfer function for the inverted pendulum.
b) Determine the signal flow graph for the system $\frac{G(s)}{R(s)} = \frac{2.5(s+13)}{(s+10)^2(s+40)}$.

3. a) A unity negative feedback control system has the plant $G(s) = \frac{k}{s(s+\sqrt{2k})}$. Find the rise time, percentage overshoot, peak time and settling time for a unit step input.
For what range of ***k*** is the settling time less than 1 second?
b) Explain the effect of proportional, integral and derivative control on the closed loop system.

4. a) The characteristic equation is $\boldsymbol{s^4 + ks^3 + 2s^2 + s + 3 = 0}$; Find the range of '***k***' for the system to be stable.
b) Explain the effect of adding a Zero to **G(s)H(s)** on the root loci.

5. Comment upon the stability by drawing Bode plot of the system $G(s) = \frac{1}{s^2(1+s)(1+4s)}$.

6. a) Define the terms phase margin and gain cross over frequency.
b) Draw the Nyquist plot and assess the stability if open loop transfer function of a closed loop system in $G(s) = \frac{s+6}{(s+2)(s-2)}$.

7. a) Determine the transfer function of a lead compensator that will provide a phase lead of 45° and gain of 18 dB at ω = 5 rad/sec.
b) Explain the Lag compensator design briefly.

8. Given the transfer function: $G(s) = \frac{2}{(s+12)^3}$. Write the state transition matrix.

CODE No.:10BT50101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

STRUCTURAL ANALYSIS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A simple girder of 20m span is traversed by a moving UDL of 6m length with an intensity of 20 kN/m from left to right. Find the maximum BM and maximum positive and negative shear forces at a section 4m from the left support. Also find the absolute maximum BM that may occur anywhere in the girder.

2. a) Sketch the influence line diagram for the BM and SF at section 4m located 4m from the fixed end of a cantilever of san 6m.
b) Sketch the influence line for the Shear Force and BM at the mid span of a overhanging beam of span "L", between the supports and overhanging portion a.

3. Analyse the continuous beam shown in Fig.1 using Moment distribution method, and draw shear force and bending moment diagrams. Locate and find the distances of the points of contra-flexure from supports. Draw elastic curve.

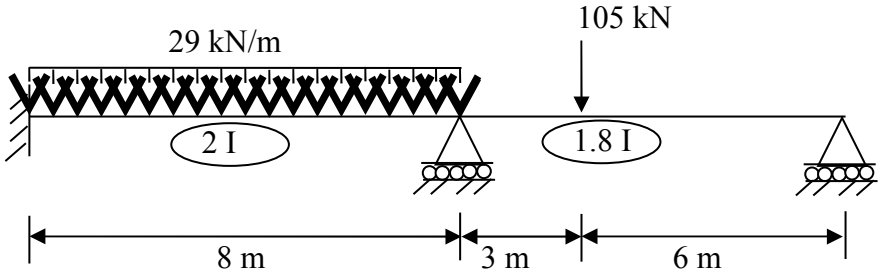


Fig.1

4. Analyze a portal frame of bay length 4m, height 5m, subjected to a UDL of 5kN/m on the beam. Sketch the BMD and SFD.

5. Analyse the continuous beam shown in Fig.2, using Kani's method. Draw bending moment diagram and elastic curve.

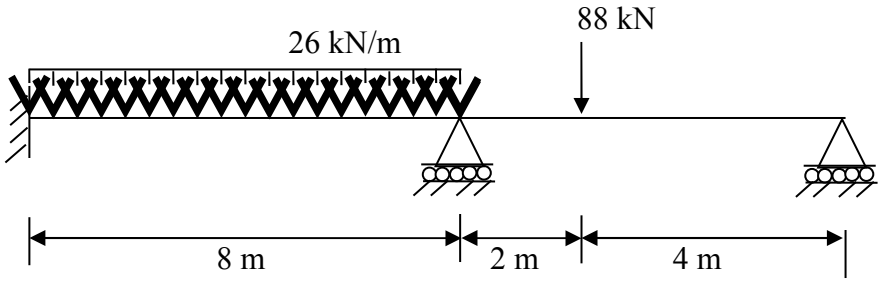


Fig.2

6. Determine the vertical deflection of the frame shown in Fig.3. The load is such that the tension members of the frame are stressed to 176 MPa and the compression members to 72 MPa. Take E = 207 GPa. Use Strain Energy method.

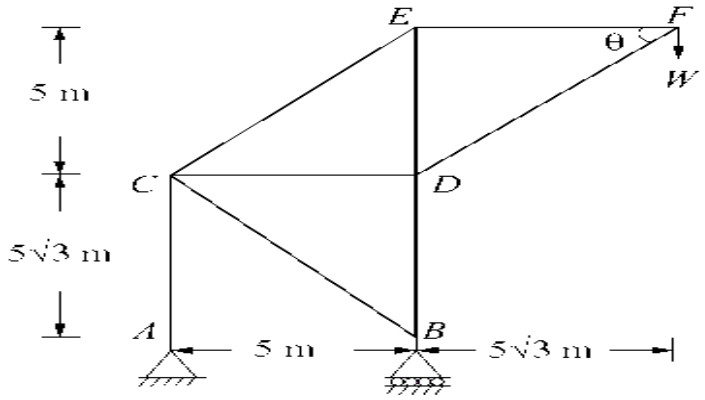


Fig.3

7. Analyse the truss shown in Fig.4. Determine the forces in all the members. AE is constant.

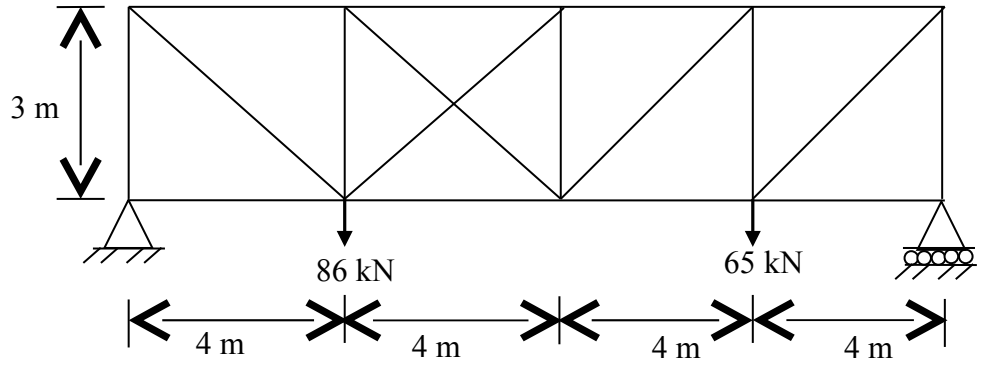


Fig.4

8. Analyse the frame shown in Fig.5 using Cantilever method. Draw the bending moment diagram and sketch elastic curve. Cross-sectional area of all columns is equal.

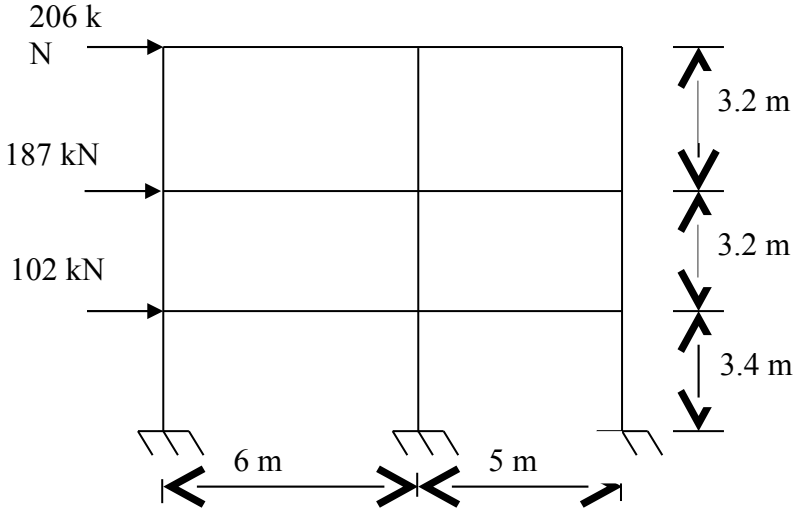


Fig.5

CODE No.:10BT50102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

REINFORCED CEMENT CONCRETE STRUCTURES - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Design a doglegged stairs for an office building in a room measuring 2.8 m **x** 5.8 m clear. Vertical between the floors is 3.6 m. Width of flight is to be 1.25 m. Allow a live load of 3 kN/m^2. Sketch the details of the reinforcements. Use M20 concrete and Fe 415 steel. Assume the stairs are supported on 230 mm walls at the end of outer edges of landing slabs.

2. Design a combined footing for the two columns of a multistory building. The columns of size 400 mm **x** 400 mm transmit a working load of 800 kN each and they are spaced at 5 m centres. The safe bearing capacity of soil at site is 200 kN/m^2. Adopt M20 grade concrete and Fe 415 grade steel.

3. Design a pile cap to support a column service load of 1100 kN. Size of the column is 400 mm x 400 mm. The cap is supported on four 300 mm diameter piles spaced at 900 mm centers. The cap projects 150 mm beyond the pile face. The materials are M20 grade concrete.

4. Design a cantilever retaining wall to retain earth to a height of 4.5 m above the ground level. The top of the earth is to be level. The unit weight of backfill and its angle of repose are 17 kN/m^3 and 30 degrees respectively. The safe bearing capacity of the soil is 200kN/m^2 and coefficient of friction between soil and base is 0.55. Use M 20 grade concrete and Fe 415 grade steel.

5. Design a RC spherical dome of 10 m diameter at the base and 4 m rise. The dome is subjected to uniformly distributed pressure of 2.5 kN/m^2 on its surface. Use M20 and Fe 415 steel.

6. Design the sidewalls of a rectangular reinforced concrete water tank of interior dimensions 5 m **x** 2 m with the depth of storage water being 2 m. Adopt M20 grade concrete Fe 415 grade steel. Sketch the details of reinforcement.

7. A beam circular in plan is loaded uniformly with uniform load of 75 kN/m inclusive of self weight. The radius of beam is 4.5 m. The width of the beam is 350 mm. The beam is symmetrically supported on five columns. Analyze and design the beam. Use M30 concrete and Fe 415 steel.

8. a) Explain the various losses of prestressing.
b) A concrete beam, 150 mm wide and 300 mm deep, is prestressed by a straight cable carrying an effective force of 200 kN at an eccentricity of 50 mm. The span of the beam is 7.2 m and supports a total uniformly distributed load of 45 kN/m. The initial stress in the tendon is 1000 N/mm^2. Determine the percentage increase of stress in the tendons due to loading on the beam. Use E_s = 210 kN/mm^2 and E_c = 35 kN/mm^2.

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CODE No.:10BT50103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

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) Explain with a neat sketch different phases of a hydrologic cycle.

2. a) Explain how you will estimate average precipitation over a catchment. Also discuss merits and demerits of different methods.
b) In a storm of 210 minutes duration, the incremental rainfall at various time intervals is given below:

Time since start of the storm (mins)	30	60	90	120	150	180	210
Incremental rainfall in the time interval (cm)	1.75	2.25	6.00	4.50	2.50	1.50	0.75

Draw the hyetograph and rainfall mass curve for the above data.

3. a) Define infiltration. Explain the various infiltration indices.
b) Explain the stream flow measurement by area - velocity method.

4. a) Discuss different phases of runoff. Explain the factors affecting runoff from a catchment.
b) A catchment area of 140 sq.km received 120 cm rainfall in a year. At the outlet of the catchment the flow in the stream draining the catchment was found to have an average rate of 2.0 cumec for three months, 3.0 cumec for six months and 5.0 cumec for three months.
i) What is the runoff coefficient of the catchment?
ii) If the afforestation of the catchment reduces the runoff coefficient to 0.5, what is the increase in the abstraction from precipitation due to infiltration, evaporation and transpiration for the same rainfall of 120 cm.

5. a) What is a hydrograph? Draw a single peaked hydrograph and explain its components.
b) Compute the ordinates of a storm hydrograph resulting from a 4 hour storm with rainfall of 40 mm. The ordinates of 4 hour unit hydrograph are given below:

Hours	3	6	9	12	15	18	21	24	3	6	9	12	15	18	21	24
Ordinates of unit hydrograph (cumec)	**0**	**115**	**370**	**505**	**395**	**315**	**255**	**240**	**180**	**135**	**100**	**70**	**45**	**25**	**15**	**0**

Assume an initial loss of 5mm and infiltration index 2.5mm/hour. Base flow is 15 cumec.

6. a) Differentiate between
i) Hydraulic routing and hydrologic routing
ii) Channel routing and reservoir routing
iii) Prism storage and wedge storage.
b) Describe the method of estimating a T_r - year flood using Gumbel's distribution.

7. a) Explain briefly the following terms as used in ground water flow studies.
i) Specific yield, ii) Porosity and, iii) Specific retention.
b) Distinguish between
i) Aquifer and Aquifuge, ii) Confined aquifer and water table aquifer and
iii) Aquiclude and Aquitard.

8. a) Define safe yield of a well. How is pumping test conducted on the field? Also state its limitations.

b) A 30 cm diameter well completely penetrates a confined aquifer of permeability 45 m/day. The length of the strainer is 20 cm. Under steady state of pumping the drawdown at the well was found to be 3.0 m and the radius of influence was 300 m. Calculate the discharge.

CODE No.:10BT50104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

SOIL MECHANICS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the relationship between void ratio, degree of saturation, specific gravity and water content.
b) A sample of sand with the specific gravity of solids of 2.65 has a porosity of 40%. Find the dry unit weight, saturated unit weight, submerged unit weight and bulk unit weight when the degree of saturation is 50%.

2. a) Differentiate between:
i) Liquidity index and Relative consistency
ii) Flow index and Toughness index
iii) Sensitivity and Activity
b) The Atterberg limits of a clay are LL= 53% ; PL= 34% and SL=17%. If the specimen of this soil shrinks from a volume of 10 cm^3 at liquid limit to 5.9 cm^3 when it is dried, calculate shrinkage ratio and volumetric shrinkage.

3. a) State Darcy's law and its validity for flow through soil mass. Distinguish between discharge velocity and seepage velocity. Derive the relationship between them.
b) In a falling heat permeability test on a soil of length L_1, the head of water in the stand pipe takes 5 seconds to fall from 900 to 135 mm above the tail water level. When another soil of length 60 mm is placed on the first soil, the time taken for the head to fall between the same limits is 150 seconds. The parameters has a cross sectional area of 4560 mm^2 and stand pipe area of 130 mm^2. Calculate the permeability of second soil.

4. a) Derive Laplace equation starting the assumptions made for a two-dimensional flow through soil mass.
b) A soil profile consists of a sand layer followed by a clay layer. Sand has a thickness of 4.5 m. Clay also has a thickness of 4.5 m. The water table is situated at a depth of 2 m below the ground surface. Sand has a specific gravity of 2.68 and a porosity of 50%. Sand above the water table may be assumed as dry. The clay has a saturated unit weight of 19.8 kN / m^3. Draw the total, neutral and effective stress diagrams showing the values at the depth of the water table, at the boundary separating the two soils and at the bottom of the clay layer.

5. a) Derive an expression for the vertical stress below the centre of circular load.
b) Three concentrated loads of 200 kN each are acting at the three corners of an equilateral triangle of side 3 m. Calculate the vertical pressure in the soil at a depth of 2 m at the centre of the triangle.

6. a) Explain the factors affecting the compaction.
b) The following data is obtained from IS light compaction tests.

Water content (%)	7.4	9.7	10.5	11.5	13.1	14.5
Bulk density (kN/m^3)	18.8	20.0	20.5	21.0	21.0	20.0

Calculate the optimum moisture content and maximum dry density.

7. a) How is coefficient of consolidation determined from one dimensional laboratory consolidation test results using:

i) square root of time method

ii) logarithm of time method.

b) The coordinates of two points on a virgin compression curve are as follows:

$e_1 = 1.82 \quad \sigma_1^1 = 200kPa$

$e_2 = 1.54 \quad \sigma_2^1 = 400kPa$

i) Determine compression index and coefficient of volume compressibility for the pressure range stated above.

ii) Given that $C_v = 0.003$ cm²/sec, determine coefficient of permeability corresponding to the average void ratio.

8. a) Briefly outline the triaxial compression test, also mention its advantages compared to direct shear test.

b) The unconfined compression strength of a soil is found to be 150 kN / m². A sample of the same soil failed at a deviator stress of 200 kN / m² when it is tested in a consolidated undrained triaxial compression test with a cell pressure of 50 kN / m². Determine the shear parameters of the soil.

CODE No.:10BT50105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

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. State the definition of a mineral. Analyze the physical and diagnostic properties of the following minerals:
   i) Quartz
   ii) Olivine
   iii) Mica
   iv) Kyanite

3. Write geological classification of igneous rocks and explain how these rocks are good building materials than the other two varieties.

4. Write the following with neat illustrations
   i) Recumbent fold and thrust fault
   ii) Differences between fault and joint
   iii) True dip and apparent dip

5. Detail the causes and effects of the landslides. Elucidate the precautions to be taken to control them.

6. State the importance of geophysical methods in subsurface exploration and detail the procedure of magnetic method with its principle.

7. Describe the different exploratory investigations under taken at different stages of site selection for location of a dam and its reservoir.

8. Explain the following.
   i) Significance of water table in Tunneling.
   ii) Tunnel Support systems.
   iii) Geological problems encountered in hard and soft rocks.
   iv) Classification of tunnels based on geometry.

CODE No.:10BT50201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

POWER ELECTRONICS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw and explain static characteristics of SCR.
b) Explain the dynamic turn-on and turn-off times of SCR with neat waveforms.

2. a) Explain in detail the Two-Transistor analogy of SCR with proper sketches.
b) It is required to operate 250 amps SCR in parallel with 350 amps SCR with their respective on-state voltage drops of 1.6 volts and 1.2 volts .Calculate the value of R to be inserted in series with each SCR so that they share the load of 600 amps proportion to their current ratings.

3. a) Describe the significance of **di/dt** and **dv/dt** in SCRs.
b) SCR's with a rating of 1000 V and 200 A are available to be used in a string to handle 6 KV and 1 KA. Calculate the number of series and parallel units required in case derating factor is i) 0.1 and ii) 0.2.

4. Explain the principle of operation of single phase half controlled bridge rectifier with RL load. Draw the relevant wave forms and derive output voltage and current.

5. a) Explain the principle of operation of three phase semi-converter with R- load with associated waveforms.
b) Compare 3-phase mid-point converter and bridge type converter and bring out important features.

6. Explain the principle of operation of single phase voltage controller with RL load. Draw necessary waveforms. Derive the expression for output voltage and current.

7. a) With the help of a circuit diagram, explain the working of step-up chopper.
b) With circuit diagram and load voltage waveform, explain the different modes of operation of AC chopper.

8. a) Explain Bi-polar PWM full-bridge inverter with relevant waveforms.
b) A single-phase bridge inverter is supplied from 220 V DC voltage and has a load of 7 Ω resistance and 20 mH inductance. The output frequency of inverter is 50 Hz. Determine the steady-state power delivered to the load for square wave operation.

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CODE No.:10BT50202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

AC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the main constructional features of cylindrical rotor and salient pole alternators.
b) Derive the EMF equation of a Synchronous Generator.

2. a) What are the causes of harmonics in the voltage waveform of an alternator? How can these be minimized?
b) The effective resistance of a 2200 V, 50 Hz, 440 KVA, single phase alternator is 0.5 ohm on short circuit a field current of 40 A gives the full load current of 200 A. The EMF on open circuit with the same excitation is 1160 V, calculate the synchronous reactance and SCR.

3. a) Explain the two reaction theory of salient pole synchronous machines. Describe a method of determining direct and quadrature axis reactance of salient pole alternator.
b) A 500 kva 1100 V 50Hz Y-connected 3-phase alternator has R_a per phase of 0.1 ohm and X_s per phase 1.5 ohms find its voltage regulation for 0.8 Leading P.F.

4. In what respect is the operation of an alternator on infinite bus bar different from parallel operation of two alternators? What is the effect of change in excitation and change in mechanical power input on operation of an alternator on infinite bus?

5. a) Explain why a synchronous motor is not self starting? What are the characteristics of synchronous motor?
b) A 3-phase 6600V, Y- connected synchronous motor delivers 500 KW power to the full load. Its full load efficiency is 83%. It has a armature resistance and synchronous reactance of 0.3 Ω and 3.2 Ω per phase respectively. Calculate the generated **emf** per phase for full load with 0.8 **p.f** leading.

6. a) Explain the construction and principle of operation of a split-phase induction motor.
b) Describe the torque-slip characteristics of single phase induction motor.

7. a) Explain the working principle and application of AC series motor.
b) What is universal motor? List the merits and demerits of universal motor.

8. Explain the operation of Stepper motor and explain the truth table for a 6 pole stator and 4 pole rotor for half step operation.

CODE No.:10BT50203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

ELECTRICAL POWER TRANSMISSION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write the advantages of P.U system
b) Prove that $\mathbf{Z_{P.U,new} = Z_{P.U,old} X\ (KV_{b.old}/KV_{b.new})^2\ X\ (MVA_{b,new}/MVA_{b,old})}$.

2. a) Derive the capacitance of a 3φ line with unsymmetrical spacing.
b) A 3-φ, 50Hz transmission line has flat horizontal spacing with 3.5meters between adjacent conductors. The conductors are No.2/0 hard drawn seven strands copper (outside dia=1.05cm), the voltage of the line is 110 KV. Find the capacitance to neutral and the charging current per kilo-meter of line.

3. a) Explain the skin and proximity effects on resistance of solid conductors.
b) A 3-**φ** , 220 KV, 50 Hz transmission line has equilateral triangular spacing of 2 m side. The conductor diameter is 3.0 cm. The air density factor and surface irregularity factor are 0.95 and 0.83 respectively. Find critical disruptive voltage and corona loss per kilometer.

4. a) Explain the variation of current and voltage on an overhead line when one end of line is:
i) short-circuited
ii) open-circuited
and at the other end a source of constant e.m.f. V is switched in.
b) Determine the relative attenuation occurring in two cycles in the over voltage surge set up on a 132 KV cable fed through an air blast breaker when the breaker opens on a system short circuit. The breaker uses critical resistance switching.
The net work parameters are R = 10 ohms, L = 8 mH and C = 0.08 μF.

5. Define reflection and refraction co-efficient at open and short circuit condition.

6. A string of eight suspension insulators is to be graded to obtain uniform distribution of voltage across the string. If the capacitance of the top unit is 10 times the capacitance to ground of each unit, determine the capacitance of the remaining seven units. How can it be improved? What do you mean by string efficiency?

7. Explain stringing chart and **sag** template and their applications.

8. a) Draw the cross-section of a 3-core belted high voltage cable and describe its various parts.
b) A 33 KV 3-phase underground cable, 4 km long, uses three single-core cable. Each of the conductors has a diameter of 2.5 cm and radial thickness of insulation is 0.5 cm. the relative permittivity of the dielectric is 3.0.

Determine:
i) Capacitance of the cable per phase and charging current per phase.
ii) Total charging kVAR.

CODE No.:10BT50301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

THERMAL ENGINEERING - II

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain with the help of neat diagram, a 'reheat cycle'. Also derive an expression for its thermal efficiency.

b) In a Rankine cycle, the steam at inlet to turbine is saturated at a pressure of 35bar 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 working principle of a Babcock and Wilcox boiler with the help of a neat sketch.

b) Distinguish between fire tube and water tube boilers.

3. a) Define the term 'steam nozzle'. Explain various types of nozzles.

b) Derive an expression for the steam discharged through nozzle.

4. a) Explain the importance of compounding of impulse turbine with the steam flow behaviour in different blading conditions.

b) The following particulars are for a single row impulse turbine.

Mean diameter of blade ring = 2.5 meter,
Speed = 3000 rpm,
Nozzle angle = 20^0,
Ratio of blade velocity to steam velocity = 0.40,
Blade friction factor = 0.8,
The blade angle at exit = 30 less than inlet,
The steam flow rate = 36,000 kg/hr.

Draw velocity diagram and Calculate:
i) Power developed
ii) Blade efficiency
iii) Steam consumption in kg/kWh.

5. Write the assumptions in derivation of maximum efficiency condition of reaction turbine. And derive condition for maximum efficiency of reaction turbine with neat relevant sketches.

6. a) Write a short note on fuels used for gas turbines.

b) State the merits of gas turbine over I.C. engines and steam turbines. Discuss also the demerits over gas turbines.

7. Air is drawn in a gas turbine plant at 1.01 bar and 15^0C and the pressure ratio is 7:1. The compressor is driven by the HP turbine and LP turbine drives a separate power shaft. Then isentropic efficiencies of compressor and the HP and LP turbines are 0.82, 0.85 and 0.85 respectively. If the maximum cycle temperature is 610^0C,

Calculate:

i) The pressure and temperature of the gases entering the power turbine
ii) The work ratio
iii) The net power developed by the unit per kg/s mass flow.
iv) The thermal efficiency of the unit.

(Assume: I for compression process: c_{pa}=1.005 kJ/kg-k, γ=1.4 for combustion and expansion process: c_{pg}=1.15 kJ/kg-k, γ=1.333 Neglect the mass of fuel.)

8. a) Draw the schematic diagram along with P-v and T-s digrams of turboprop engine and explain its working principle.

b) A rocket motor with chamber pressure and temperature of 2.04 MPa, 2200 K, operates at sea level where pressure is 0.1 MPa. Find thrust produced and specific impulse for propellant consumption of 1.0 kg/s. Take c_p = 1500 J/kg K, γ = 1.3, g = 9.807 and R = 346 J/kg K. Find also thrust when the pressure inside the nozzle is 50% of initial.

CODE No.:10BT50302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

DYNAMICS OF MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and explain D'Alembert's principle.
   b) What do you mean by equivalent offset inertia force? Explain.

2. A disc supported between two bearings on a shaft of negligible weight has a mass of 80 kg and a radius of gyration of 300 mm. The distances of the disc from the bearings are 300 mm to the right from the left-hand bearing. The bearings are supported by thin vertical cords. When the disc rotates at 100 rad/s in the clockwise direction looking from the left-hand bearing, the cord supporting the left-hand side bearing breaks. Find the angular velocity of precession at the instant the cord is cut and discuss the motion of the disk.

3. a) Explain Prony brake with sketch.
   b) In a band block brake, the band is lined with 14 blocks, each of which subtends an angle of 20° at the drum center. One end of band is attached to the fulcrum of the brake lever and the other to a pin 150 mm from the fulcrum. Find the force required at the end of the lever 1 meter long from the fulcrum to give a torque of 4 kN-m. The diameter of the brake drum is 1 meter and the coefficient of friction between the blocks and the drum is 0.25.

4. A certain machine requires a torque of (1500 + 200 sin θ) Nm. to drive it, where θ is the angle of rotation of the shaft. The machine is directly coupled to an engine which produces a torque of (1500 + 200 sin θ) Nm. The flywheel and the other rotating parts attached to the engine have a mass of 300 kg at a radius of gyration of 200 mm. If the mean speed is 200 r.p.m., find the
   i) Fluctuation of energy
   ii) Total percentage fluctuation of speed
   iii) Maximum and the minimum angular acceleration of the flywheel and the corresponding shaft positions

5. a) Define effort and power of a governor.
   b) A governor of the Hartnell type has equal balls of mass 3 kg set initially at a radius of 200 mm. The arms of the bell crank lever are 110 mm vertically and 150 mm horizontally.
   Find: i) The initial compressive force on the spring if the speed for an initial ball radius of 200 mm is 240 r.p.m. and
   ii) The stiffness of the spring required to permit a sleeve movement of 4 mm on a fluctuation of 7.5 % in the engine speed.

6. The reciprocating masses of the three cylinder engine are 4.1, 6.2 and 7.4 tonnes respectively. The centre lines of the three cylinders are 5.2 m; 3.2 m and 1.2 m from the fourth cylinder. If the cranks for all the cylinders are equal, determine the reciprocating mass of the fourth cylinder and the angular position of the cranks such that the system is completely balanced for the primary force and couple. If the cranks are 0.8 m long, the connecting rods 3.8 m and the speed of engine 75 r.p.m, find the maximum unbalanced secondary force and the crank angle at which it occurs.

7. a) Explain Dunkerly's method.
   b) A 22 mm wide and 45 mm deep steel bar is freely supported at two points that are 800 mm apart and carries a load of 180 kg midway between them. Determine the natural frequency of the transverse vibration, neglecting the weight of the bar.

8. Discuss in detail vibration measuring instruments.

CODE No.:10BT50304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

DESIGN OF MACHINE ELEMENTS - I

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are various stages in the design of a machine element?
b) List out various constraints encountered by a design engineer.

2. a) What is *Factor of Safety*? What is its importance in Design?
b) Define *Endurance Limit*. How does this dependent on the size of a component?

3. A steel rod of circular cross section and of length 2 m is acting as a cantilever beam. It is loaded with appoint load at its free end that varies from 250 N to 500 N. Determine the diameter of the rod, if endurance limit and the yield point of the material are 155 MPa and 360 MPa respectively.

4. a) What is a riveted joint? Classify different types of riveted joints.
b) Design a double riveted butt joint with two cover plates for the longitudinal seam of a Boiler shell 1.5 m in diameter subjected to a steam pressure of 0.95 N/mm^2. Assume joint Efficiency as 75% , allowable tensile stress σ_t = 90 MPa, allowable compressive stress σ_c = 140 MPa and shear stress in the rivet τ = 56 MPa.

5. a) What is a bolt of uniform strength? Give sketches.
b) The cylinder head of an air compressor is held in position by steel stud bolts. The cylinder bore is 400 mm in diameter and the maximum pressure is 0.75 MPa. Assuming that no packing material is necessary, determine the number and size of the stud bolts to be used. The permissible tensile stress may be taken as 250 MPa.

6. a) Describe the purpose of **gib** in cotter joint. What are the applications of cotter joints?
b) Design a knuckle joint to transmit 140 kN, with permissible stresses in tension; shear and compression are 75 MPa; 60 MPa and 150 MPa respectively.

7. a) A hollow shaft is subjected to a maximum torque of 1.5 kN-m and a maximum bending moment of 3 kN-m. It is subjected, at the same time, to an axial load of 10 kN. Assume that the load is applied gradually and the ratio of the inner diameter to the outer diameter is 0.5. If the outer diameter of the shaft is 80 mm, find the shear stress induced in the shaft.
b) Discuss various types of shafts and the standard sizes of transmission shafts.

8. a) What is a coupling? Classify different types of couplings and mention their applications.
b) Design and draw a protective type of cast iron flange coupling for a steel shaft Transmitting 15 kW at 200 r.p.m and having an allowable shear stress of 40 MPa. The Working stress in the bolts should not exceed 30 MPa. Assume that the same material is used for shaft and key and that the crushing stress is twice the value of its shear stress. The maximum torque is 25% greater than the full load torque. The shear stress for C.I. is 14 MPa.

CODE No.:10BT50305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

INDUSTRIAL ENGINEERING AND MANAGEMENT

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the significance of `direction' in an organization.
b) What are the requirements of effective direction?

2. a) Classify types of production.
b) Define and differentiate between types of plant layouts.

3. a) Explain flow process chart by taking suitable example.
b) Write short notes on work sampling.

4. a) Describe basic principles of value analysis.
b) Draw a schematic diagram of responsibilities of a purchase officer.

5. a) Draw O.C. curve and mark salient points and explain each term.
b) Write short notes on scatter diagram.

6. a) Explain the characteristics of various types of maintenance briefly.
b) Explain about various types of failures.

7. Discuss in detail about professional code of conduct. Explain necessity entrepreneurial journey.

8. a) Define HRM.
b) Explain in detail Human Resource Planning process.

CODE No.:10BT50401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

ANALOG COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain AM generation using square law modulator.
b) Explain AM demodulation using envelope detector.

2. a) The output power of an AM transmitter is 1KW when sinusoidally modulated to a depth of 80%. Calculate the power in each side band if it is transmitted as DSBSC.
b) Explain DSBSC generation using 2 diode - balanced modulator indicating all the waveforms and spectrums.

3. a) Derive the amount of power saved in SSB-SC when compared with the AM wave.
b) Explain the time domain description of VSB waves.

4. a) State Carson's Rule.
b) Explain the FM demodulation using PLL.

5. a) Explain noise performance of DSB - SC receiver and derive the Signal to Noise ratio parameter.
b) Explain in detail about Pre-emphasis and De-emphasis in Angle modulation.

6. a) Classify radio transmitters according to the type of modulation and according to the frequency range involved.
b) With the help of block diagram, explain AM transmitter with modulation at low carrier power level.

7. a) Explain the super heterodyne receiver type for FM.
b) Give the standard specifications for super heterodyne receiver of AM and FM.

8. a) Define PAM, PPM, PWM and explain the demodulation of PPM wave.
b) What is multiplexing and explain the difference between TDM and FDM multiplexing schemes?

CODE No.:10BT50402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

ANTENNAS AND WAVE PROPAGATION

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the terms
i) Patterns ii) Radiation intensity iii) Beam efficiency
iv) Directivity and Gain v) Antenna aperture.
b) Explain the radiation mechanism.

2. a) Derive the expression for power radiated and find the radiation resistance of a half wave dipole.
b) How many distant point sources can a receiving antenna with directivity D resolve?

3. a) Draw the radiation pattern of 8 - isotropic elements fed in phase, spaced $\lambda / 2$ apart with the principle of pattern multiplication.
b) Write short notes on :
i) Binomial arrays
ii) Phased arrays

4. a) What is Yagi-uda Antenna? Explain the construction and operation of Yagi-uda Antenna. Also explain its general characteristics.
b) Differentiate between circular and rectangular horn antenna.

5. What is micro strip antenna? Give different types of micro strip antenna and design a square shape micro strip antenna with a frequency of 5 GHz and calculate impedance, efficiency, beam width.

6. a) Derive FRIIS Transmission formula. Find the transmitter power required to operate a link with identical antennas of 25 dBi separated by 15 KM such that received power is -45 dBm and f = 5.8 GHz.
b) Explain the Gain comparison method for measuring the gain of an antenna.

7. a) How is the propagation of electromagnetic waves at very high and ultra high frequencies different from that of medium and low frequency.
b) Discuss troposphere wave propagation.

8. a) Derive the expression for the Maximum Usable Frequency assuming the earth to flat.
b) Explain the terms :
i) Skip Distance
ii) Optimum working frequency
iii) Lowest usable frequency

CODE No.:10BT50403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operation of differential amplifier with neat circuit diagram.
b) Perform the DC and AC analysis of dual-input balanced-output differential amplifier.

2. a) Discuss op-amp four IC packages of amp IC741.
b) Explain the ideal characteristics of op amplifier.

3. a) How the op-amp acts as a
i) Summer ii) Subtractor iii) Instrumentation Amplifier
b) In an inverting adder circuit, the input voltages are 0.3V, 0.5V, 0.1V while $\mathbf{R_1 = R_2 = R_3 = 1K\Omega}$, If $\mathbf{R_f = 10K\Omega}$. Calculate the output voltage.

4. a) With a neat sketch, explain the operator of a free running oscillator using op-amp.
b) Design a phase shrift oscillator to oscillate at a frequency of 200 Hz.

5. a) Draw and explain block diagram of PLL and explain each block.
b) Explain the following terms with respect to PLL
i) Free running state ii) Lock in range
iii) Capture range iv) Pull in time

6. a) With the block diagram of IC555, explain its application as a monostable multivibrator.
b) Explain AM and FM detection using PLL.

7. a) Write about any 4 specifications of DAC/ADC.
b) Compare direct and integrating type ADCs. With neat sketches, explain the working of a successive approximation ADC.

8. a) Draw and explain the circuit diagram of a sample and hold circuit using operational amplifier.
b) How are analogue multiplexers classified? Explain the principle of operation of any one of the type.

CODE No.:10BT50404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2014

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail about CMOS steady state electrical behavior.
b) Discuss in detail about special features of CMOS logic.

2. Explain the term propagation delay and describe how it will effects the speed of the circuit with a suitable example.

3. a) Explain VHDL design flow.
b) Explain various data types supported by VHDL. Give the necessary examples.

4. a) Explain the data-flow design elements of VHDL.
b) Design the logic circuit and write a data flow style VHDL program for the following function.
$F(p) = \Sigma A,B,C,D\ (2,6,7,9,11,15)$.

5. a) Write data flow style VHDL program for 74x138 IC.
b) Design a 12 - bit comparator using 74x85 IC's and discuss the functionality of the circuit. Also write VHDL code for this.

6. a) Design a 24 - bit comparator using 74x682 ICs and write VHDL code for this.
b) Write the VHDL code for 4-bit Barrel shifter.

7. a) Write a VHDL code for SR flip-flop and JK flip-flop in behavioral model.
b) Write a VHDL entity and architecture for a 3-bit synchronous counter using flip-flops.

8. a) Design a 8×4 diode ROM using 74x138 for the following data starting from the first location. B, 2, 4, F, A, D, E, F.
b) Explain the internal structure of 64K × 1 DRAM with the help of timing waveforms describe the DRAM access.

CODE No.:10BT50421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

ELECTROMAGNETIC THEORY

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State the Coulomb's law in SI units and indicate the parameters used in the equation.
b) A charge of −0.3μC is located at A (25, -30, 15) cm and a second charge of 0.5 μC is located at B (-10, 8, 12) cm. Find the electric field strength, 'E' at
i) The origin
ii) Point P (15, 20, 50) Cm

2. a) Derive the boundary conditions for electric field intensity E at the conductor-dielectric interface.
b) Two isotropic dielectrics meet on plane z =0. For $z \geq 0$, $\varepsilon_{r1} = 4$ and for $z \leq 0$, $\varepsilon_{r2} = 3$. A uniform electric field $E_1 = 5\mathbf{a}_x - 2\mathbf{a}_y + 3\mathbf{a}_z$ kV/m exists for $z \geq 0$. Find the energy densities in both dielectrics and energy within a cube of 2 m centred at (3, 4, -5).

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) Write Maxwell's equations in time varying fields and static fields.
b) What are the characteristics of free space and write Maxwell's equations in free space.

5. a) Discuss about uniform plane waves in lossless dielectrics and establish the relationship between electric and magnetic fields in the medium.
b) The electric field in free space is given by $E = 50 \cos(10^8 t + \beta x)\, a_y$ V /m.
i) Find the direction of wave propagation.
ii) Calculate β and the time it takes to travel a distance of half-wavelength.
iii) Sketch the uniform plane wave at t = 0, T/4 and T/2.

6. a) Define Brewster angle. Derive Brewster angle for perpendicular polarization.
b) Define transmission coefficient and reflection coefficient. Derive expressions for it.

7. a) Write short notes on Electrostatic discharge.
b) List out natural and man-made EMI sources and explain them in brief.

8. a) Explain different methods to eliminate Electromagnetic Interference.
b) What is shielding? Explain about shielding effectiveness.

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

LINEAR AND DIGITAL IC APPLICATIONS

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss in detail about the AC performance characteristics of operational amplifier.
b) Explain in detail about the frequency compensation applied to operational amplifier.

2. a) Write a short note on the following applications of operational amplifier.
i) Voltage to current converter ii) Antilog amplifier iii) Multivibrators
b) Explain the working of an instrumentation amplifier using op-amp with neat diagram along with various applications.

3. a) Sketch the functional schematic diagram of 555 timer and explain how it can be used as a monostable multivibrator.
b) Draw the internal circuit diagram of IC565 and explain its working.

4. a) Consider the dynamic behavior of a CMOS output driving a given capacitive load. If the resistance of the charging path is double the resistance of the discharging path, is the rise time exactly twice the fall time? If not, what are the other factors affect the transition times?
b) What are the desirable features of CMOS gates? Sketch the circuit of CMOS NAND gate and verify that it satisfies the Boolean NAND equation.

5. a) Draw the circuit diagram of basic TTL NAND gate and explain the three parts of functional operation.
b) Explain the following with reference to TTL gate.
i) Logic Levels ii) D.C. Noise Margin
iii) Low-state unit load iv) High-state fan-out

6. a) Explain the various steps carried out when the VHDL Simulator is applied for a VHDL p program.
b) Explain the ways to specify a time delay in a VHDL code with an example.

7. a) Design and draw Dual priority encoder and develop the VHDL source code in behavioral model.
b) Explain the design approach of ALU. Draw the necessary logic diagrams.

8. a) Design a 4-bit binary synchronous counter using 74X74 IC. Write VHDL program for this logic.
b) Explain how serial data communication is possible using 74X166 as transmitter and 74X164 as receiver.

CODE No.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

PRINCIPLES OF COMMUNICATIONS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Find the Fourier transform of a single sided exponential function $\mathbf{e^{-bt}}$ u(t) and draw the spectrum. Where u(t) is the unit step function.

2. a) Explain single tone modulation of AM and DSB-SC with all the relevant waveforms.
b) Explain SSB-SC generation using phase shift method.

3. a) Compare AM and FM modulation schemes including the definition, expression and modulation index in each case.
b) Explain the detection of FM using Foster-seeley discriminator.

4. a) What is PPM and explain the generation of PPM signal using PWM.
b) What is multiplexing and compare TDM and FDM.

5. a) Derive the quantization error for PCM.
b) Explain about delta modulation.

6. a) Draw the block diagram of FSK transmitter and explain the working principle.
b) Write the differences between coherent and non coherent systems. Give examples.

7. a) Explain Huffman coding with an example.
b) A discrete memory less source has an alphabet of seven symbols whose probabilities of occurrence are as described here.

Symbol	s0	s1	s2	s3	s4	s5	s6
Probability	0.25	0.25	0.125	0.125	0.125	0.0625	0.0625

Compare the Huffman code for this source, moving a “combined” symbol as high as possible. Explain why the composed source code has an efficiency of 100 percent.

8. a) What do you understand by error control coding? Explain the various methods briefly.
b) Design a linear block code with a minimum distance of 3 and a message block size of 8 bits and find first five code words.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is meant by *pseudocode* ? Explain its significance with example.
b) Write notes on probabilistic analysis of algorithms.

2. a) Describe disjoint set operations.
b) Explain the connected and bi-connected components.

3. a) Explain Merge sort algorithm with an example.
b) Explain Quick sort algorithm with an example.

4. a) Discuss the general method of Greedy algorithm.
b) Consider n = 7, m = 15 (p1, p2, ….. p7) = (10, 5, 15, 7, 6, 18, 3) and (w1, w2, ….. w7) = (2, 3, 5, 7, 1, 4, 1). Obtain the optimal solution for this Knapsack instance.

5. a) Write and explain the dynamic programming algorithm for computing a binomial coefficient. Obtain the time efficiency of the algorithm.
b) Explain matrix chain multiplication algorithm.

6. a) Describe coloring of a graph with an example.
b) Solve the n-queens problem using backtracking.

7. a) Illustrate the Branch-and-Bound approach of solving assignment problem.
b) Write notes on LC branch and bound solution.

8. a) State and explain Cook's theorem.
b) Explain the classes of NP-hard and NP-complete.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

MICRO-PROCESSOR AND INTERFACING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the addressing modes of 8086 microprocessor with an example for each.
b) Describe the functions of the following two registers
i) Instruction pointer ii) Stack pointer

2. a) Explain the following 8086 instructions with examples.
i) MUL ii) IMUL iii) DIV iv) IDIV
b) Write an assembly language program to find the maximum from an array of 10 numbers.

3. a) Explain the need of DMA transfer.
b) Explain with block diagram the minimum mode configuration of 8086 processor with necessary timing diagrams.

4. Write an assembly language program to rotate 200 teeth, 4 phase stepper motor as specified below.
i) Five rotations clockwise and then five rotations anticlockwise.
ii) Rotate through angle 135º in 2 sec
iii) Rotate the shaft at a speed of 10 r.p.m.

5. a) What is the internal operating frequency of 8259? How can you derive it from the clock signal? Give the different types of command words used in 8259.
b) What do you mean by software interrupts? Explain how 8086 will respond to the software interrupts.

6. a) Write briefly about different methods of data communication.
b) Draw the internal block diagram of 8251 and explain about each block in detail.

7. a) Write briefly about the basic features of RISC processors.
b) Explain the use of the following registers of 80386
i) segment descriptor register ii) control register
iii) debug and test register iv) system address register.

8. a) Discuss any four major differences between a microprocessor and a microcontroller.
b) Describe the following registers of 8051 microcontroller.
i) A ii) B iii) SP iv) DPTR

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CODE No.:10BT50503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

DATABASE MANAGEMENT SYSTEMS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss in detail about database system architecture with neat diagram.
b) Write short notes on transaction management.

2. a) Book club has members to whom the books are sold. The books are made available at different places in the city. The books are identified by a book_id, the author and the publisher. An author can write more than one book and a book can have more than one author. Members have information such as Membership_id, Name, Phone# and Status. A member can place more than one order. You can choose additional attributes for the schema that seem appropriate. Mention any assumption you make. Show minimum and maximum cardinality ratios based on your assumptions.
i) Design an E-R schema diagram for this application
ii) Map the E-R diagram into relational model.
b) Explain about relationship sets with examples.

3. a) What is the difference between tuple relational calculus and domain relational calculus?
b) Explain with suitable example different join operations exist in Relational algebra.

4. a) Explain any 3 set operators in SQL
b) Consider the following schema:
suppliers(sid:integer, sname:string,address:string)
parts(pid:integer,pname:string,color:string)
catalog(sid:integer,pid:integer,cost:real)
i) Find names of suppliers who supply at least one part
ii) Find names of suppliers who supply more than three parts
iii) Find the total number of suppliers
iv) Find the number of suppliers who supply at least one part

5. a) Define functional dependency.
b) Give a set of FDs for the relation schema R(A,B,C,D) with primary key AB under which R is in 1NF but not in 2NF.
c) Briefly discuss about Schema Refinement in Database Design.

6. a) Discuss about lossless join decomposition.
b) What are properties of transaction? Explain them.

7. a) Describe about the following:
i) 2PL ii) Conservative 2PL
b) Write short notes on buffer management.

8. a) Give the advantages and disadvantages of RAID level 2 and RAID level 3.
b) Explain the Indexed Sequential Access Method.

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

OPERATING SYSTEMS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operating system structures and its components.
b) Describe Inter process communication in client server systems.

2. Consider the following set of processes, with the length of the CPU-burst time given in milliseconds.

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	5
P4	1	4
P5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time 0.
a) Draw four Gantt charts illustrating the execution of these processes using FCFS, SJF, a non pre-emptive priority (a smallest priority number implies a highest priority) and RR (quantum = 1) scheduling.
b) What is the turnaround time of each process for each of the scheduling algorithms in part a?
c) What is the waiting time of each process for each of the scheduling algorithms in part a?
d) Which of the schedules in part a results in the minimal average waiting time (over all processes) ?

3. What is dining-philosophers problem? Devise an algorithm to solve this problem.

4. What is deadlock? What are the necessary conditions for it to happen? Explain deadlock prevention methods in detail.

5. a) Explain the similarities and differences between paging and segmentation.
b) What is virtual memory? How can it be implemented?

6. a) What are the various file allocation methods? Explain in detail.
b) How free space is managed using bit vector implementation.

7. What are the different disk scheduling algorithms? Explain them in detail.

8. a) Describe various types of user authentication techniques.
b) Discuss common program threats.

CODE No.:10BT51001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

PROCESS CONTROL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the different types of process variables?
b) Define "Degrees of freedom" and bring out its importance in process control.

2. a) Discuss about the selection of controller for various Processes.
b) Discuss about two−position control and single−speed-floating control.

3. a) Explain in detail, the realization of proportional-integral action with the aid of bellows, flapper-nozzle etc.
b) Draw a three mode electronic controller and derive the expression for the output voltage.

4. a) Explain in detail about IAE, ISE, ITAE evaluation criteria.
b) Discuss continuous oscillation method for control loop tuning.

5. a) Draw the construction of direct acting pneumatic actuator with positioner. Explain its working principle.
b) What do you mean by fail safe operation in final control element? Explain it with an example.

6. a) Differentiate cavitation and flashing. What is the use of Application ratio?
b) Define:
i) Rangeability ii) Control valve coefficient iii) Valve size

7. a) State the necessity of split range control for a process.
b) Explain the principles of split range control for multiple inputs by taking simple examples.

8. a) What is multiple effect evaporation? Explain it.
b) Draw simple schematic of heat exchanger and explain the control.

CODE No.:10BT51002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

INDUSTRIAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the measurement of angular displacement using Gyroscope.
b) With suitable diagram, explain how surface finish measurement is done.

2. a) Explain the principle, operation and application of Magnetostrictive transducer.
b) Explain the principle and operation of Tachogenerators and Stroboscope.

3. a) Explain how the pressure is measured by ionization of gases.
b) Describe how the vibration cylinder transducer measures the pressure.

4. a) Discuss the Laser Doppler velocimeter based flow measurement.
b) Explain the concept of variable area meters used for flow measurement.

5. a) Describe the working of Buoyancy method for measurement of density with a neat diagram.
b) List some devices for measuring Viscosity in laboratory and explain any one of them.

6. a) Design a ON-OFF controller for temperature range of 30 ^{o}C - 150 ^{o}C.
Assume current through RTD as 25 mA. Bridge is balanced at 30 ^{o}C.
b) Explain the principle, operation and application of Optical Pyrometers.

7. a) Discuss in detail about measurement of Level by Capacitive method.
b) Write short notes on Float Gauge method of measuring level.

8. a) A LVDT output is recorded by a self balancing potentiometric recorder having its natural frequency of 10 Hz and a damping ratio of 0.707. The LVDT is excited by 10 V at 50 Hz power supply. Calculate the maximum frequency of the displacement signal that can be recorded with an error of $\pm$ 2%.
b) Explain the principle and operation of Gyroscope and Microphone.

CODE No.:10BT51201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

SOFTWARE ENGINEERING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Under what circumstances is product quality likely to be determined by the quality of the development team? Give examples of the types of software product that are particularly dependent on individual talent and ability.
b) You are a programming manager who has given the task of rescuing a project that is critical to the success of the company. Senior management has given you an open-ended budget and you may choose a project team of up to five people from any other projects going on in the company. However, a rival company working in the same area is actively recruiting staff and several staff working for your company has left to join them. Describe two models of programming team organization which might be used in this situation and make a choice of one of these models. Give reasons for your choice and explain why you have rejected the alternative model.

2. a) Draw spiral model and explain each and every region of software development.
b) Define functional and nonfunctional requirements of software.

3. Classify the following requirements into F for 'Functional', NF for 'non-functional', and X for 'should not be a requirement'. Justify your answer. If you need more information to provide the answer to one of these questions, indicate what else you need to know.
i) The system must use 128-bit encryption for all transactions
ii) If the alarm system is ringing, then the elevators (lifts) will proceed to the ground floor, open their doors and suspend further operations.
iii) The student information system will give output from all commands within one second. The system will use an array to hold the invoices.

4. Effective modular design is built through application of the following properties
i) Functional Independence ii) Cohesive functioning iii) Coupling /Decoupling
Explain how the above mentioned properties will be useful for effective modular design by showing an appropriate example.

5. Consider an "IVRS" based voting system in which the voting process is based on the "Interactive Voice Response System" (IVRS). Define the Features, Use cases and also the Traceability Matrix with Features against Use cases for the "Interactive Voice Response System".

6. Suggest a contingency action plan for the following risks:-
a) Project Manager may leave in the middle of the project
b) System designer may have to leave for USA in three months funds budget may fall short by 15% in the last phase of cycle

7. a) Discuss metrics for software quality.
b) Explain about metrics for analysis model.

8. a) What is the process of performing the Software Reviews? Draw a flow diagram about the work flow in software reviews.
b) Explain the quality concepts with appropriate examples.

CODE No.:10BT51202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

COMPUTER GRAPHICS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Illustrate about DDA line drawing algorithm with relevant examples in detail.
b) Explicate in detail the basic features of graphic hardware and software components.

2. a) Explain the steps involved in DDA algorithm for line generation.
b) Explain the scan line polygon fill algorithm.

3. a) Elucidate Cohen-Sutherland line clipping method in detail.
b) Explain hidden-surface problem. Also argue in brief how can you identify and remove these surfaces.

4. a) Derive the window to view port transformations equations by first scaling the window to the size of the view port and then translating the scaled window to the view port position.
b) Explain about 4-bit code address significance in Cohen-Sutherland algorithm.

5. a) i) Give a short notes on General Purpose Graphics Software.
ii) Define transformations by using matrices in brief.
b) Discuss Depth-Buffer algorithm and their limitations in computer graphics.

6. a) Describe the properties of meshes used in solid modeling.
b) Derive the transformation matrix for rotation about an arbitrary axis in 3D domain.

7. a) Discover the final co-ordinates of a figure bounded by the co-ordinates (1, 1), (3, 4), (5, 7) and (10, 3) when scaled by two units in X direction and three unit in Y direction.
b) Mention any six types of curve generations. Represent B-Spline method for curve generation.

8. a) What are the various hardware requirements of multimedia components and explain it?
b) Explain different steps in the design of animation sequence.

CODE No.:10BT51301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

ADVANCED CONTROL SYSTEMS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Consider the system defined by

$\dot{x} = Ax + Bu$

$y = Cx$

$$where\ A = \begin{bmatrix} -1 & 0 & 1 \\ 1 & -2 & 0 \\ 0 & 0 & -3 \end{bmatrix},\ B = \begin{bmatrix} 0 \\ 1 \\ 1 \end{bmatrix}, C = \begin{bmatrix} 1 & 1 & 1 \end{bmatrix}$$

Transform the system equations into the controllable canonical form.

2. Discuss the state controllability and observability of the following system:

$$[\dot{x}] = \begin{bmatrix} -3 & -1 \\ -2 & 1.5 \end{bmatrix} [x] + \begin{bmatrix} 1 \\ 4 \end{bmatrix} [u]$$

3. Define backlash. Derive the describing function of a backlash non-linearity.

4. a) How is delta method useful in stability analysis?

b) Draw the phase trajectory of the system described by the equation $\ddot{x} + \dot{x} + x^2 = 0$; connect on the stability of the system.

5. a) State Lyapunav's stability theorem.

b) Check the stability of the system described by $\dot{x}_1 = x_2$

$\dot{x}_2 = -x_1 - x_1^2 x_2$

6. Consider the system

$\dot{x} = Ax + Bu; y = Cx$

$A = \begin{bmatrix} 0 & 20.6 \\ 1 & 0 \end{bmatrix}, B = \begin{bmatrix} 0 \\ 1 \end{bmatrix}, C = \begin{bmatrix} 0 & 1 \end{bmatrix}$ Where the system uses the observed state feedback such that $u = -k\tilde{x}$. Design a full order state observer, assuming the desired eigen values of the observer matrix are $\mu_1 = 10$ and $\mu_2 = 10$.

7. Describe :

a) Minimum - fuel problem b) Minimum - energy problem

c) Output regulator problem

8. Explain the Euler-Lagrange equation.

CODE No.:10BT51302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

PROCESS CONTROL

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the four levels of a process control system.
b) Describe important components of a process control system. Give two examples of process control system.

2. a) Explain in detail about proportional, integral, derivative control actions.
b) Define tuning of a controller. Discuss in detail about Ziegler Nichols tuning method.

3. a) Derive a closed loop temperature response of a tank-heater.
b) Explain in detail about Gamma ray method.

4. a) Explain with a neat diagram about air supply for pneumatic systems.
b) Distinguish between Hydraulic and Electronic controllers with respect to their advantages and disadvantages.

5. a) Compare feedback and feed forward control actions.
b) Discuss in detail about electric motor actuators.

6. Discuss the following in detail:
a) Condenser vapors
b) Fired heaters

7. a) How is steam temperature controlled in a drum boiler? What features of once through boiler enables manipulation of feed water flow to control temperature?
b) Write any five differences between exothermic and endothermic reactions.

8. a) How a pressure process can be monitored and controlled in a steel manufacturing process?
b) Briefly explain cement manufacturing process.

CODE No.:10BT51501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

SYSTEM SOFTWARE

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) A compiler typically generates a **.**OBJ file, which is later convened into **.**EXE or a **.**COM File. Clearly describe the difference between the three files.
b) Write the complete sequence of steps involved in dynamic debugging of a program.

2. Explain about LOOP and a conditional jump instruction with examples.

3. a) Explain various string operations and arithmetic operations in details.
b) Discuss in detail about advanced screen and keyboard processing functions.

4. a) Write short notes on macro directives.
b) How can you pass an argument to the macros? Explain.

5. Describe the following in detail:
i) Conditional macro expansion
ii) MASM macro processor
iii) ANSI C macro language

6. a) What are the factors to be considered in design of an assembler? Explain in detail.
b) Draw the Pass 2 of two pass assembler flow chart and give the list of databases in Pass 1.

7. a) Describe the compile and go loader, absolute loader and relocating loader with diagrams.
b) Explain the algorithm and data structures for a linking loader.

8. a) Explain in detail about the design of an editor with a structure.
b) Discuss in detail about interactive debugging systems.

CODE No.:10BT51502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

OBJECT ORIENTED SOFTWARE ENGINEERING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the waterfall model and compare it with spiral model.
b) Explain a software engineering is a layered technology.

2. a) Explain COCOMO Model. Calculate the number of people required for a Web Based Project of size 30KDSI using basic COCOMO model.
b) Explain in detail about W^5HH Principle.

3. a) Describe with an example RMMM plan.
b) Discuss about ISO 9000 quality standards.

4. a) Draw the following UML diagrams for Flight Booking System
i) Usecase ii) Object iii) Collaboration iv) Package
b) State and explain the working of two tools that is used in designing UML diagrams.

5. a) Differentiate between Reactive and Proactive Risk Strategies.
b) Differentiate between the Traditional and Agile software development methods.

6. a) Differentiate between White Box, Black Box and Grey Box testing
b) Write short notes on any two of the following
i) Unit Testing ii) Regression Testing and its types iii) Alpha and Beta Testing

7. a) Discuss clearly about risk projection.
b) Distinguish between generic risks and product risks.

8. a) Describe about the software reliability.
b) Explain the software quality assurance plan.

CODE No.:10BT52305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

BIOCHEMICAL REACTION ENGINEERING

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Derive a kinetic expression for a single substrate, irreversible catalytic reaction :

$$S + E = ES \rightarrow P + E$$

2. a) After 8 minutes in a batch reactor, reactant(C_{AO}=1 mol/liter) is 80% converted; after 18 minutes, conversion is 90%. Find a rate equation to represent this reaction.

b) Find the first order rate constant for the disappearance of A in the gas reaction A 1.6 R if the volume of the reaction mixture, starting with pure A increase by 50 % in 4 minutes. The total pressure within the system stays constant at 1**.**2 **atm** and the temperature is 25°C.

3. The elementary liquid-phase reaction , $A + B \underset{K_2}{\overset{K_1}{\rightleftharpoons}} R + S$, $\mathbf{k_1}$ = 7 L/mol-min,

$\mathbf{k_2}$ = 3 L/mol-min is to take place in a 120- L steady state mixed reactor. Two feed streams, one containing 2.8 mol A/ L and the other containing 1.6 mol B / L, are to be introduced in equal volumes in to the reactor and 75 % conversion of limiting component is desired. What should be the flow rate of each stream?

4. a) Explain about Plug flow reactors in series and parallel.

b) An aqueous reactant stream (4 mol A/liter) passes through a mixed flow reactor followed by a plug flow reactor. Find the concentration at the exit of the plug if in the mixed flow reactor $\mathbf{C_A}$ = 1 mol/liter. The reaction is second-order with respect to A, and the volume of the plug flow unit is three times that of the mixed flow unit.

5. Explain the mechanism for the kinetics of enzyme catalyzed reactions. What are the various theories proposed to explain the formation of enzyme substrate complex? Explain in detail substrate strain theory.

6. Consider the parallel decomposition of A, C_{A_0}= 4.

$$A \begin{cases} \rightarrow R & r_R=1 \\ \rightarrow S & r_S=2C_A \\ \rightarrow T & r_T=C_A^2 \end{cases} \text{ ..... desired}$$

Find the maximum expected C_T for isothermal operations

a) in a mixed flow reactor b) in a plug flow reactor

7. Write a detailed note on axial dispersion model.

8. A reactor with a number of dividing baffles is to be used to run the reaction A ⟶ R with -rA= 0.05 C_A mol/liter min. A pulse tracer test gives the following output curve:

Time,min	0	10	20	30	40	50	60	70
Concentration reading	35	38	40	40	39	37	36	35

i) Find the E versus t curve.

ii) Calculate the variance of the E curve.

iii) How many tanks in series in this vessel equivalent to?

iv) Calculate XA assuming the tanks in series mode.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

THEORY OF COMPUTATION

[Computer Science and Systems Engineering]

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

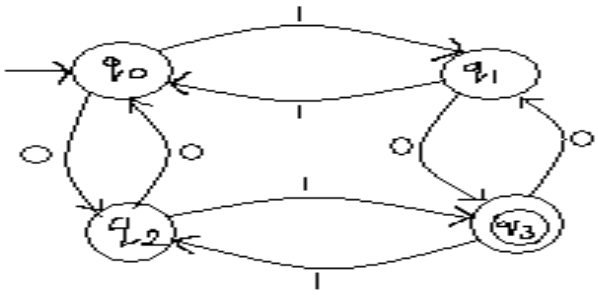
Answer any FIVE questions
All questions carry equal marks

1. a) Explain the construction steps involved in converting an NFA to DFA.
b) Design a DFA which accepts set of all strings contains 1100 as substring, where $\sum = \{0, 1\}$.

2. a) Formally define Mealy and Moore machines.
b) Construct Moore machine to output number modulo 3 where number is the value of the binary string input.

3. a) Find Regular grammars for the set of all strings must end with 01 over {0, 1}*.
b) Prove that the language $L = \{ a^n b^m c^n - n \geq 1 \}$ is not a regular.

4. a) Find the left linear grammar for the given DFA.



b) Write the Chomsky classification of languages.

5. a) Convert the following grammar G into GNF
S → XA/BB
B → b/SB
X → b
A → a
b) What is nullable variable? Write the procedure for eliminating ε-productions.

6. a) Design PDA for Equal number of a's and b's.
b) Convert the given CFG to GNF **S→AB, A→BS/b, B→SA/A**.

7. a) Design TM that accepts **L={$0^n 1^n$}**.
b) Design TM that accepts **L={$0^n 1^n 0^n$}**.

8. a) What are LR(K) Grammar. Check whether the following Grammar is LR(0) or not
S → (A)
S → *a*
A → SA
A → ε
b) What is a Universal Turing Machine?

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

MANAGEMENT SCIENCE

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the contributions of F.W.Taylor to the evolution of management thoughts.
b) Discuss the managerial skills which bring out effective management.

2. a) What is the best organizational structure for a manufacturing organization? List five mistakes committed during designing the organizational structure.
b) List the merits and demerits of matrix organizational structures.

3. a) List and explain the steps involved in work-measurement.
b) Enumerate the factors affecting quality and explain how to overcome them.

4. a) Discuss the functions of Marketing.
b) State the objectives of Materials Management.

5. a) What is Herzberg's two factor theory of motivation and differentiate it from Maslow's theory of need hierarchy.
b) Define merit rating. Explain the importance and objectives of merit rating.

6. The following data refers to the project. The indirect cost is Rs.200/day. Find the project normal duration. If all activities are crashed to maximum possible length, then what is the corresponding cost of the project? The project contains A, B, C, D, E, F, G, and H activities.
i) A, B,C are starting activities. ii) D,E, and F start after completion of A.
iii) G can start after B and D. iv) H can start after C and E.
The cost data is given below.

Job	Nd in days	Nc	Cd	Cc
A	3	140	2	250
B	6	215	5	275
C	2	160	1	240
D	4	130	3	180
E	2	170	1	250
F	7	165	4	285
G	4	210	3	290
H	3	110	2	50

7. a) How does the stages in Entrepreneur process starts? Explain with examples.
b) Identify the different roles of women entrepreneur in national development.

8. a) Explain the importance of managing the marketing and logistics interface on an integrated basis in a supply chain.
b) What is ERP? Explain its component subsystems.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

OBJECT ORIENTED PROGRAMMING

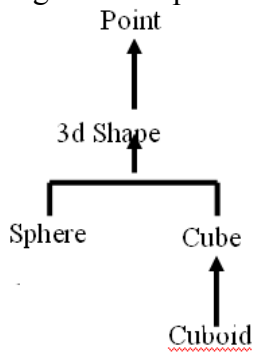
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Is it possible to define the function members outside the class? Illustrate this with a C++ program depicting "student class".
b) Give the restrictions on the usage of local classes.

2. a) Write a C++ program to implement following class hierarchy.



The 3d Shape should be an abstract class. The function get Volume() and draw() are implemented virtually.
b) Extend the above program to calculate the area of various shapes.

3. a) Write a simple Java program to print Fibonacci series.
b) Explain the access control in Java.

4. a) How is polymorphism achieved through method overriding?
b) Explain interfaces in java. How does it differ from classes?

5. a) There are two classes in a source codes A. Class, B.Class. The locations of those classes are "C:/A.Class" and "C:/aaa/bbb/ccc/ddd/B.Class". How will you make the compiler to find those class files?
b) What is exception handling? What are the two basic types of exception handling? Which type of handling is done by virtual machine? How?

6. a) Write a program to demonstrate key event handler.
b) Write a program to illustrate creation of threads using Runnable class. (start method start each of the newly created thread. Inside the run method there is sleep() for suspend the thread for 500 milliseconds).

7. a) Explain adapter classes in detail.
b) What are Menubars and Menus?

8. Explain with a sample program for the JComponent.

CODE No.:10BT60405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

VLSI DESIGN

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With the help of flow diagram, describe the fabrication of CMOS transistor using Berkeley n-well process.
b) Explain why oxidation of silicon is required.

2. a) Compare various forms of pull up arrangements for the inverter with the help of their transfer curves.
b) What is threshold voltage V_T? Give the expression for threshold voltage V_T and discuss the relationship of body effect on threshold voltage.

3. a) Explain VLSI Design flow with the help of Flow Chart
b) Draw the Schematic Diagram for $Y = ((\overline{A . B}) . (\overline{C + D}))$

4. a) With neat sketches, explain the properties of pass transistors and transmission gates.
b) Calculate the gate capacitance value of 5 **µm** technology minimum size transistor with gate-to-channel capacitance value of 4×10^{-4}pF/ **µm**^{2}.

5. a) Explain the design considerations and architectural issues for designing of 4-bit ALU.
b) Draw the stick diagram for parity generator in NMOS.

6. a) Implement full adder using PLA.
b) Draw the structure of PAL and explain its operation.

7. a) List the various types of simulations. Explain Logic-level and Mixed-mode simulations.
b) Explain the various design capture methods and list the associated CAD tools used.

8. Write short notes on;
a) Automatic Test Pattern Generation (ATPG) method.
b) IDDQ testing.
c) Fault models.

CODE No.:10BT60503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

DATA WAREHOUSING AND DATA MINING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss about multidimensional data model.
b) Explain three-tier data warehouse architecture with neat diagram.

2. a) "*Data mining as a confluence of multiple disciplines*." Discuss.
b) Discuss mining methodology and user interaction issues.

3. a) What are the different forms of data preprocessing? Explain.
b) Suppose a group of 12 sales price records has been sorted as follows.
5, 10, 11, 13, 15, 35, 50, 55, 72, 92, 204, 215
Partition them into three bins by each of the following
i) Equal-frequency (equi-depth) partitioning
ii) Equal-width partitioning.

4. a) Discuss various ways in which the efficiency of a priori algorithm can be improved.
b) Discuss in detail with examples whenever necessary, the two formats of data for mining frequent item sets.

5. a) Discuss in detail with examples whenever necessary, the notions of association rule and support and confidence of an association rule.
b) Discuss in detail with examples whenever necessary, multi level association rules and various support threshold variations for them.

6. a) Explain Grid-based clustering methods.
b) Write and explain the k-means algorithm.

7. a) Discuss in detail with examples whenever necessary, mining time series data.
b) Discuss in detail with examples whenever necessary, mining biological data.

8. a) Explain in detail about the web-usage mining, web structure mining and web content mining.
b) Explain two similarity measures used in Text Mining.

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

COMPUTER NETWORKS

[Electronics and Communication Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain with neat sketch, the functions of the protocols in each layer of the OSI reference model.
b) Provide a brief, high level description of how the Internet's connection oriented service provides reliable transport.

2. a) Discuss about any two guided transmission media and unguided transmission media in detail with suitable diagram.
b) Sometimes when a mobile user crosses the boundary from one cell to another, the current call is abruptly terminated, even though all transmitters and receivers are functioning perfectly. Why?

3. a) What are the pros and cons of using Error detection and Error correction?
b) What is hamming distance? How hamming distance is calculated for a set of code words? How the hamming distance is used for error detection and correction?
c) What is sliding window?

4. a) Explain 1-persistent, p-persistent and non-persistent CSMA.
b) Outline and discuss the main fields in Ethernet IEEE 802**.**3 frame. What are the main objectives of preamble?

5. a) Define congestion. How different layers helps in controlling congestion?
b) What is the use of flooding? How it works? How do you control flooding? What are the applications for which flooding is preferred? Justify your answer.

6. a) Explain how connection has been established and terminated in TCP in detail.
b) Describe why an application developer might choose to run an application over UDP rather than TCP.

7. a) What are the different tags of HTML? Explain them briefly.
b) How text documents and image documents are linked using HTML?

8. With relevant example, discuss substitution and transposition ciphers.

CODE No.:10BT70101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

REMOTE SENSING AND GIS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the relationship between photo and ground coordinates and explain the importance.
b) A distance of 119.4mm is scaled on a photograph for which the focal length is 210mm. The corresponding distance of 27.2mm is scaled on a map that is to a scale of 1in 50000. The area in question lies at an elevation of 100m above sea level. Determine the flying height above MSL when the photograph was taken.

2. a) Explain the considerations of an Ideal Remote sensing.
b) State the Electromagnetic spectral regions.

3. a) Discuss in detail EMR interaction with atmosphere.
b) Calculate EMR energy of wavelength 0.55 μm.
Take C (speed of EMR in vacuum) = 3×10^{8} m/s, Plank's constant = 6.626×10^{-34} J-s.

4. a) Explain with a simple example the fundamental operations of GIS.
b) Describe Geographical entities, attributes, topology and cognitive models.

5. a) What are the data input and output devices used in GIS?
b) Define Projection System in GIS. Discuss about polyconic and UTM projection system.

6. a) Explain Reclassification and Buffering with examples.
b) Explain briefly on overlay analysis of raster and vector approach.

7. a) Describe how land use-land cover plays a major role in water resources projects.
b) Explain the application of RS-GIS in flood and draught impact assessment.

8. Discuss various parameters used for identification of suitable locations for artificial ground water recharging in entire Andhra Pradesh. How do they influence the ground water recharging?

CODE No.:10BT70102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

ENVIRONMENTAL ENGINEERING - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the necessity of sewage collection and disposal.
b) Discuss the various sewerage systems with respect to their suitability. List the merits and demerits of the sewerage systems.

2. a) What is house drainage and plumbing systems? Classify the plumbing systems and explain the two pipe system of plumbing.
b) Compute the diameter and discharge of a circular sewer laid at a slope of 1 in 500 when it is running half full and with a velocity of 2.0m/s. Assume that the pipe is a concrete one.

3. a) Differentiate between BOD and COD. Explain the importance of BOD and COD ratio while deciding the treatment options.
b) The BOD of a wastewater sample incubated for 3 days at 27^0C is 270 mg/l. Find the 5 day BOD of the sample at 30^0C.

4. a) What are the functions of various treatment units of a conventional sewage treatment plant?
b) Design a circular sedimentation tank for sewage treatment for a city generating 1.4×10^6 liters/day of sewage . The sedimentation (detention) period is 5 hours, the velocity of flow is 12 cm/minute and depth of water in the tank is 4.0 m. Assume an allowance for sludge to be made is 60 cm.

5. a) Differentiate between attached growth and suspended growth systems giving examples. Explain the underlying principles in each of the system.
b) Explain the working principles of oxidation ponds. Discuss the problems associated with using oxidation ponds.

6. Write a detailed note on removal of
i) Nitrogen and ii) Dissolved solids

7. a) Explain the factors influencing self purification phenomena of rivers.
b) A stream, saturated with DO, has a flow of 1.2 m^3/s, BOD of 4mg/L and rate constant of 0.3 per day. It receives an effluent discharge of 0.25m^3/s having BOD: 20mg/L DO: 5 mg/L and rate constant 0.13 per day. The average velocity of flow of stream is 0.18m/s. Calculate DO deficit at point 20km downstream. Assume that saturation DO at 20^0 C as 9.17mg/l.

8. Write note on:
a) Methods of collection of municipal solid waste .
b) Energy recovery from municipal solid waste.

CODE No.:10BT70103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

STEEL STRUCTURES - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. The B.M. and S.F at a particular section of a plate girder are 5000 kN.m and 1500 kN respectively. Design a plate girder using thin web and end stiffener.

2. Design the cross section of a welded plate girder of constant depth to carry a superimposed load 50kN/m in addition to its self-weight, over a span 20.0 m.

3. a) Explain the stepwise deign procedure for the support plate and anchor design for a roof truss resting on concrete columns.
b) A roof truss shed is to be built in Machilipatnam for an industry. The size of a shed is 22 m **x** 50 m. Height of the building is 14m at the eaves. Determine the basic wind pressure.

4. Design the purlin and principal rafter for a tubular steel truss to suit the following data:

Span of the truss	=	18 m.
Type of truss	=	Fink truss
Roof cover	=	GI sheeting
Spacing of roof trusses	=	4.5 m.
Wind pressure	=	1.5 kN/m^2.

Sketch the details of the designed section.

5. Design a gantry girder for a mill building to carry an electric overhead traveling crane having the following data.

Span of the Gantry Girder	=	6m
Crane Capacity	=	210kN
Distance between centers of girder	=	15m
Weight of crane girder	=	110kN
Weight of crab	=	50kn
Minimum approach of crane hook	=	1.01m
Distance between centers of wheels	=	3.6m
Height of Rail Section	=	80mm
Weight of Rail section	=	300N/m

6. An overhead pressed tank is to be designed for a capacity of 65000 liters at Vijayawada railway station. Pressed steel plates of size 1.50 m **x** 1.50 m are available. The tank is supported on beam suitably placed which in turn are supported on a staging consisting of 4 columns. The height of the tank from the ground level to the bottom of the supporting beam is 12 m. Design the tank.

7. List out the design steps for composite slab design and the connection of shear connectors.

8. a) Explain the theorems used in the Plastic analysis of structures.
b) A simply supported beam of uniform cross-section and span 2L is propped at the centre. Find out the collapse load, if equal concentrated loads of 10kN are applied at the centre of each span.

CODE No.:10BT70104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

TRAFFIC ENGINEERING AND MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe about different characteristics of vehicles and road users influencing traffic analysis.
b) Briefly discuss about various components of traffic engineering.

2. a) What are the objectives of traffic volume studies? Discuss. Also explain the method of manual traffic volume counts.
b) Speed study is conducted on a roadway and the average speed is found to be 58.4 kmph. The standard deviation is 6.2 kmph. If the speeds follow the normal distribution, find out
i) the probability that the speed is more than 60 kmph;
ii) the probability that the speed lies between 40 kmph and 70 kmph;
iii) the 15^{th} percentile speed

3. The following data is obtained in a Parking Usage Study by patrolling method.Compute the Parking load, Parking Turnover and the Parking Volume.

Time	8.00	8.30	9.00	9.30	10.00	10.30	11.00	11.30
Registration Numbers	1456	2335	2335	1456	1456	1456	1456	1456
	5784	1456	1456	5784	5784	5784	5555	5555
	6398	5784	5784	4785	5555	5555	9698	3333
	5878	9966	4785	5555	9698	9698	2354	9698
	9656	4785	1245	7417	3693	2354	5679	2354
		1245	5555	9698	2354	2121	8888	5679
			7417	2354	2121	5679	8287	
			9698	5679	5679			

4. a) Discuss the principle and design of intersection.
b) Write short notes on different traffic control aids and street furniture's provided.

5. a) What are the major pollutants released into the atmosphere by road traffic? What are their adverse effects? How these emissions can be controlled? Explain.
b) Discuss about the methods to reduce noise pollution due to road traffic.

6. a) What are Cautionary Signs and Mandatory Signs? Support your answer with neat sketches and give at least two examples for each type.
b) Explain about various types of lane markings.

7. a) What are the different types of road accidents? Discuss. Also explain how road user can be a causative factor for road accidents.
b) What is Road Safety Audit and what are the guiding Principles for RSA? How the Road Safety Audit is to be conducted? Explain.

8. Write short notes on the following.
a) Principles of Road Safety Audit
b) Level of Service
c) Intelligent Transportation Systems
d) Traffic signals

CODE No.:10BT70107

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

DESIGN AND DRAWING OF IRRIGATION STRUCTURES

[Civil Engineering]

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

Answer any ONE question
All questions carry equal marks

1. Design a sluice off from a tank irrigation 200 hectares at 1000 duty. The tank bund through which the sluice is taking off has a top width of 2 meters with 2**:**1 side slopes. The top level of bank is +50**.**00 and the ground level at site is +44**.**50. Good hard soil for foundation is available at +43**.**50. The sill of the sluice at off take is +44**.**00. The maximum water level in tank is 48**.**00. The full tank level is +47**.**00. Average low water level of the tank is +45**.**00. The details of the channel below the sluice are the under.

Bed Level + 44**.**00
F.S.L. + 44**.**50
Bed width 1**.**25 meters
Side slopes 1½ to 1 with top of bank at +45**.**50.
Draw the Plan (half at top and half at foundation level) and longitudinal section.

2. Design a cross drawing work to suit the following Hydraulic particulars

Canal:
Discharge : 35 cubic meters per second
Bed width : 20.00 meters
Bed level : + 50**.**00
Full supply level : +52**.**00
Ultimate Bed level : + 49**.**75 (U.B.L)
Ultimate Full Supply level **:** +52**.**50(U.F.S.L)
Average velocity in the canal: 0**.**83 meters per second
Left bank top width **:** 5**.**00 meters
Right bank top width **:** 2**.**00 meters
Canal side slopes both inside and outside are 2**:**1 in embankment with a minimum cover of one meter over the hydraulic gradient.
Top of canal bank **:** +53**.**50
Average ground level of flanks of drain: +48**.**00 and the bed level of the drain may also be taken as +48**.**00 at the point of crossing.
Drain Catchment area =8.0 square Kilometers. The maximum computed discharge is worked out at 60 cubic meters per second using a coefficient of C=15 in Ryve's formula maximum flood level of the drain at the site of crossing is +49**.**75 (observed). Average bed level of the drain at the site of crossing is +48**.**00. Hard soil suitable for the foundation is met + 47**.**00.
Draw the Plan (half at top and half at foundation level) and longitudinal section.

CODE No.:10BT70111

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

GROUND IMPROVEMENT TECHNIQUES

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is the need for engineering an existing ground?
b) Briefly explain mechanical, hydraulic, physico-chemical and strengthening methods of ground improvement.

2. a) Distinguish between the techniques of vibrofloatation and compaction piles.
b) Describe the deep compaction in granular soil with the factors influencing.

3. Explain any two methods of hydraulic modification of soil.

4. a) What are the various admixtures used in stabilization of soil?
b) Describe in detail the engineering benefits of lime modification of soils.

5. a) Describe the in-situ ground reinforcement methods of soils.
b) Enumerate the ground anchors method.

6. How the geosynthetics are useful for dewatering and seepage control in different applications? Explain with neat sketches.

7. a) Explain the following test procedure for the following;
i) Tensile strength of geotextiles.
ii) Burst strength of geotextile.
b) Discuss with clear illustrations, how geotextiles are useful in earthen dams construction.

8. a) What are foundation problems encountered on expansive soils?
b) Define free swell index. Why are under reamed piles preferred in expansive soil deposits?

CODE No.:10BT70203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

POWER SYSTEM ANALYSIS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the admittance matrix using singular transformation.
b) Derive the expression for branch impedance matrix by singular transformation with usual notation.

2. Derive the expressions for building Z Bus when a new element (p-q) is added such that the size of Z Bus will not change. Assume that the added element p-q is mutually coupled with one or more elements of the partial network.

3. a) Classify the buses in a power system load flow analysis.
b) Write iterative algorithm to find the load flow solution using Gauss-Seidel method, when both PQ and PV busses are present.

4. In the two-bus system shown in Figure 1, bus 1 is a slack bus with $V_1 = 1.0\angle 0^0\ pu$.
A load of 150MW and 50 Mvar is taken from bus 2. The line admittance is $y_{12} = 10\angle -73.74^0$ pu on a base of 100 MVA. The expression for real and reactive power at bus 2 is given by

$$P_2 = 10|V_2||V_1|\cos\left(106.26^0 - \delta_2 + \delta_1\right) + 10|V_2|^2\cos\left(-73.74^0\right)$$
$$-Q_2 = 10|V_2||V_1|\sin\left(106.26^0 - \delta_2 + \delta_1\right) + 10|V_2|^2\sin\left(-73.74^0\right)$$

Using Newton-Raphson method, obtain the voltage magnitude and phase angle of bus 2 for two iterations. Assume an initial estimate of $V_2^{(0)} = 1.0\ pu\ and\ \delta_2^{(0)} = 0^0$

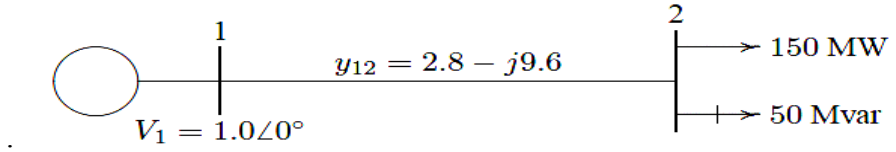


Figure 1

5. The per unit bus impedance matrix for the power system is given by

$$Z_{bus} = j\begin{bmatrix} 0.150 & 0.075 & 0.140 & 0.135 \\ 0.075 & 0.1875 & 0.090 & 0.0975 \\ 0.140 & 0.090 & 0.2533 & 0.210 \\ 0.135 & 0.0975 & 0.210 & 0.2475 \end{bmatrix}$$

A three-phase fault occurs at bus 4 through a fault impedance of Z_f = j0.0025 per unit. Using the bus impedance matrix calculate the fault current, bus voltages and line currents during fault.

6. a) Define the terms: Stability, Steady State Stability, Dynamic Stability and Transient Stability.
b) Find the steady state stability limit of a system consisting of a generator of equivalent reactance of 0.5 p.u. connected to an infinite bus through a series reactance of 1.0 p.u. The terminal voltage of the generator is held at 1.2 p.u. and voltage of infinite bus is 1.0 p.u.

7. Define the expression for steady state stability limit using ABCD parameters.

8. a) What are the assumptions for the simplification of the Transient stability study?
b) What are the assumptions in obtaining the solution of Swing equation by point-by-point method?
c) A generator operating at 50 Hz delivers 1 p.u. power to an infinite bus through a transmission circuit in which resistance is ignored. A fault takes place reducing the maximum power transferable to 0**.**5 p.u. whereas before the fault, this power was 2**.**0 p.u. and after the clearance of the fault, it is 1**.**5 p.u. By the use of equal area criterion, determine the critical clearing angle.

CODE No.:10BT70204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

FLEXIBLE AC TRANSMISSION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the expression for active as well as reactive power flow in a lossless transmission line.
b) Discuss power flow and dynamic stability considerations of a simple transmission interconnection.

2. a) Do you think FACTS technology provide solutions to the constraints of today power system? Discuss.
b) Discuss the importance of various controllable parameters of AC transmission system.

3. a) Explain the operation of single-phase full-wave voltage source converter.
b) Contrast and compare current source converter with voltage source converter.

4. a) Discuss how to improve the transient stability by using shunt compensation.
b) Explain midpoint voltage regulation with static shunt compensation.

5. Explain briefly the variable impedance type static VAR generators.

6. a) Explain the regulation and slow transfer function of SVC.
b) Write note on Transfer function and Dynamic performance of SVC and STATCOM.

7. a) Explain the basic concept of series capacitor compensation.
b) Explain how series compensation can be used for power oscillation damping.

8. Write short note on:
i) SCR controlled series capacitor.
ii) GTO Thyristor controlled series capacitor.

CODE No.:10BT70303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

FINITE ELEMENT METHODS

[Mechanical Engineering]

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

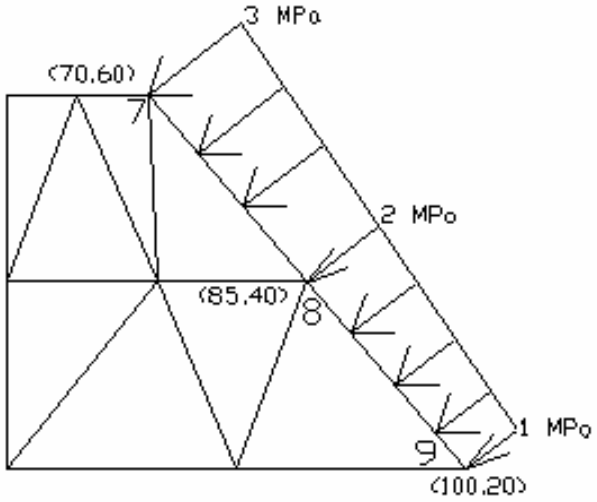
Answer any FIVE questions
All questions carry equal marks

1. a) List the steps involved in FEM and explain them briefly.
b) In a plain strain problem, σ_x=12000 MPa, σ_y=1000 MPa, E = 210 GPa and ν = 0.28. Determine the Value of the stress σ_z .

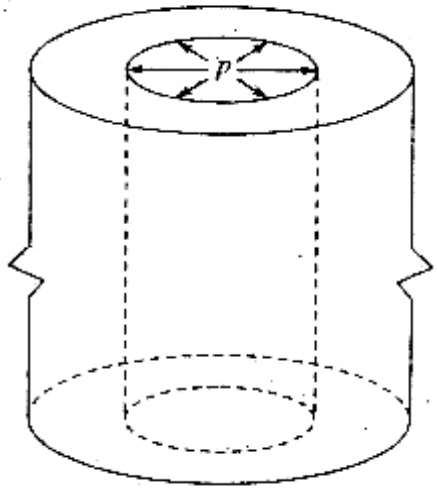
2. Consider a 1m long steel rod (3 mm **x** 10 mm cross section) held fixed at its left end and subjected to a concentrated force of 100 N at its right end. Use the two element mesh to model the problem. Solve the problem by developing the weak form of the corresponding governing equation.
i) Derive all the formulae required to solve the problem.
ii) Determine the reaction displacement and reaction.
iii) Also compare the FE solution with exact solution.

3. A cantilever beam of the length 3.4 m has an elastic spring support of stiffness 230 KN/m at its free end where a point load of 13 kN acts. Take E = 200 GPa and area moment of inertia of the cross section as $1x10^{-4}$ m^2. Determine the displacement and slope at the node and the reactions.

4. A Two dimensional plate is shown in the figure below. Determine the equivalent point loads at nodes 7, 8, 9 for the linearly distributed pressure load acting on the edge 7-8-9.

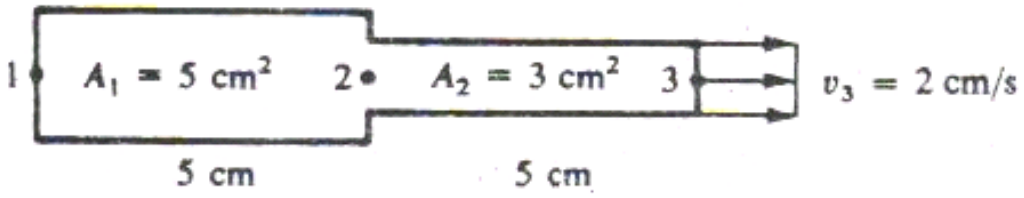


5. For a long cylinder of inside diameter 8cm and outside diameter 12 cm snugly fits in a hole over its full Length as shown in the figure below. The cylinder is subjected to an internal pressure of 5 MPa. Using two Element model over a length of 1 cm, evaluate nodal displacements and element stresses. Take E= 20 **x** 10^6 N/cm^2 and ν = 0.3.

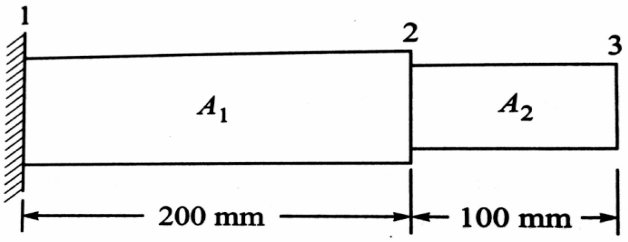


6. A metallic fin which is 1mm thick and 600 mm long extends from a plane wall whose temperature is 300 °c. Determine the temperature distribution from the fin to the air at 20 °c with h = 9 w/m^2 °c. Take thermal conductivity of the fin, k = 20 w/m °c. Width of fin is 100 mm. Use three element model.

7. For the one-dimensional fluid-flow problem shown in the figure below with velocity known at the right end. Determine the velocities and the volumetric flow rates at nodes 1and 2. Let K_{xx} = 2 cm/s.



8. Evaluate Eigen values and Eigen vectors for the stepped bar as shown in the figure below. Take E = 200 GPa and specific weight 7850 Kg / m^3**.** Draw the mode shapes. Take A_1 = 400 mm^2 and A_2 = 400 mm^2.



CODE No.:10BT70304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

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) Describe briefly about forecasting variables.
b) The sales report of a company for 13 years of operation is furnished below.

Year	Number sales
1	96
2	116
3	119
4	127
5	146
6	145
7	153
8	158
9	160
10	165
11	177
12	190
13	205

i) Find a simple regression for the above data
ii) Forecast the sales for the 14^{th} year of operation.

3. a) What do you mean by MPS?
b) A manufacturer has the following information on its major products:
Regular time production cost = Rs. 8 per unit
Regular time production capacity = 2600 units per period
Overtime production cost = Rs. 12 per unit
Overtime production capacity = unlimited
Inventory holding cost = Rs. 2/unit/period
Shortage costs = Rs. 5/unit/period
Beginning Inventory = 400 units;
Arrive at the optimal production plan if the demand for the periods 1, 2, 3 and 4 are 4000, 3000, 2000 and 2800 units respectively.

4. a) How is MRP-II different from MRP? What are the additional advantages that an organization will obtain using an MRP-II system?
b) Briefly discuss what is meant by Enterprise Resource Planning.

5. A student at a university has five term papers due soon and he must decide in what order to complete them. Below are the estimated number of days required to complete each paper and due dates

Course	Estimated Time(days)	Due date
History	3.5	7
Finance	3.5	8
POM	6.0	12
Accounting	4.5	17
math	2.5	16

a) Use the Shortest Processing Time rule to sequence the e jobs Compute average flow time and average tardiness per job using this sequence.
b) Use Earliest Due Date rule to sequence the jobs Compute average flow time and average tardiness per job using this sequence.

6. The daily demand for an item is stochastic and follows the normal distribution with a mean of 100 and a standard deviation of 20. The supplier of the item takes two weeks to deliver the item from the date the order is placed. What will be the appropriate reorder point for 90 percent and 95 percent service level? The cost of ordering is INR 1,000 per order and the carrying cost is INR 250 per unit per year. There are 250 working days in a year. If the organization places orders in fixed quantities of 500, what will be the total cost of the plan?

7. a) Which sectors of industry will have a pronounced bullwhip effect? Why?
b) What is the role of information technology in supply chain management?

8. a) What are some of the key elements of JIT systems?
b) What is lean management? Why do organisations need it?

CODE No.:10BT70305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

REFRIGIRATION AND AIR CONDITIONING

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Classify methods of Refrigeration. And also explain the working of Refrigeration by expansion of air with neat sketch.
b) Show that the C.O.P of Carnot cycle is more than the C.O.P of Bell-Coleman cycle.

2. a) Determine the COP of a VCRS when the vapor is;
i) Super heated after compression.
ii) Dry and saturated at the end of the compression.
b) A vapour compression refrigeration system based on refrigerant R 134a operates between an evaporator temperature of -25ºC and a condenser temperature of 50ºC. Assuming isentropic compression, find:
i) COP of the system.
ii) Work input to compressor.
iii) Area of superheat horn (additional work required due to superheat).

3. a) Distinguish between water cooled and air cooled condenser units.
b) Briefly explain different types of evaporators used in the refrigeration industry.

4. a) Explain practical ammonia water vapour absorption refrigeration system.
b) Explain principle and working of Electrolux refrigerator.

5. a) Explain with the help of neat sketch, the working details of Thermo electric refrigerator.
b) What are the different components involved in the working of steam jet refrigeration and explain the working of the same.

6. a) Discuss conditions of comfort you would prescribe for office building in a city, which has hot and humid climate.
b) An office is to be air conditioned for 50 staff when the outdoor conditions are 30ºC DBT and 75% R.H. If the quantity of air supplied is 0.4 m^3/min/person. Find the following:
i) Capacity of the cooling coil in tones of refrigeration.
ii) Capacity of the heating coil in KW.
iii) Amount of water vapour removed per hour Assume that required air inlet conditions are 20ºC DBT and 60% R.H. Air is conditioned first by cooling and dehumidifying and then by heating.

7. What is the difference between a fan and a blower? Explain various types of fans.

8. The following data was collected in connection with the design of air- conditioning of small theatre.
Total seating capacity 350 persons
Atmospheric condition 34ºC DBT and 70% RH
Comfort condition required 22ºC DBT,50% RH
Sensible heat given per person =320 kJ/hr
Latent heat given per person -100 kJ/hr
Sensible heat due to solar heat and infiltrated air =16,00,000 kJ/hr
Latent heat due to infiltrated air = 80,000 kJ/hr
Quality of fresh air supplied = 0.4 m^3/person/min
Desirable temperature rise in theatre 8ºC.
Assume the re circulated air is mixed with the fresh air after leaving the conditioner and also the air leaves the conditioner coil with 100% RH.
Compute: i) Percentage of total air re circulated.
ii) Refrigeration capacity of conditioner coil.

CODE No.:10BT70401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the static characteristics of an instrument?
b) Compare series type and shunt type ohmmeter.

2. a) Compare standard and modern signal generators.
b) Discuss the features of Square wave generator using a block diagram.

3. a) Define a wave analyzer. Differentiate between a Wave analyzer and Spectrum analyzer.
b) Explain Digital Fourier analyzer with a neat block diagram.

4. a) With a neat diagram, explain the CRT features.
b) Discuss the significance of Triggered sweep CRO.

5. a) Explain with a diagram, the principle of analog storage CRO.
b) Explain how the time and phase can be measured by a CRO.

6. a) Describe the operation of Kelvin's bridge.
b) Derive the balance equation for Maxwell's bridge.

7. a) Describe with the help of a diagram, the construction of an LVDT.
b) Compare briefly active and passive transducers.

8. a) Explain in detail about single channel DAS.
b) Discuss in detail about testing of audio amplifier.

CODE No.:10BT70402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

DIGITAL IMAGE PROCESSING

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the various Image sensors with neat diagrams.
b) Explain the concept of "pixel" in a digital Image.

2. a) Show that the DFT and its inverse DFT are periodic functions. (Assume 1-D function).
b) Obtain the Haar transform matrix for N=8.

3. a) What are the different spatial image enhancement techniques?
b) Write notes on Smoothing spatial filters.

4. a) Show that a high pass filtered image in the frequency domain can be obtained by using the method of subtracting a low pass filtered image from the original image.
b) Discuss about Homohorphic filtering.

5. a) What is meant by Noise in an image? Discuss some important Probability density functions.
b) Differentiate between enhancement and restoration processes. Present the restoration technique employing inverse filter.

6. a) What is the significance of Laplacian of Gaussian Operator?
b) Briefly explain about stochastic gradients.

7. a) Construct a Huff-man coding for the following data with corresponding probabilities.

a	b	c	d	e	f
0.1	0.1	0.2	0.2	0.05	0.05

Prove that this huff-man code gives error free compression
b) Write short notes on:
i) Inter pixel redundancy.
ii) Psychovisual Redundancy

8. Write short notes on;
a) Pseudo Color Image Processing
b) Color Transformations

CODE No.:10BT70405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

EMBEDDED AND REALTIME SYSTEMS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is design metric? List the design metrics for embedded system design.
b) Design a system to find GCD of given numbers. Draw a black box view, come up with a state diagram and state table, minimize the logic and then draw the circuit diagram.

2. a) Explain the development environment of general purpose processors used in an embedded system design with an example.
b) Explain the importance of the following processors in embedded systems.
i) Digital signal processor ii) ASSP

3. Explain the fifteen point strategy for synchronization between the Processes, ISRs, OS functions and Tasks for resource management.

4. a) Explain the protocol architecture of Ethernet LAN.
b) Give the broad specifications of Bluetooth.

5. Explain state transition diagram of RTOS also explain what a scheduler is and how it manages these different tasks?

6. a) What are Message Queues? Explain how Message Queues are used for communication among processes.
b) Write notes on Mailboxes.

7. a) Enumerate the evolution of various pipelining structures in ARM.
b) Explain Data Transfer Instructions of ARM in detail with examples.

8. a) Describe the new challenges created by cores for processor developers as well as users.
b) Describe each tool that has enabled the elevation of software design and hardware design to higher abstraction levels.

CODE No.:10BT70408

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

RADAR SYSTEMS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the basic block diagram of Radar system and explain.
b) Write the applications of Radar system.

2. a) Discuss about various losses present in Radar systems.
b) Define probability of false alarm. Determine probability of false alarm if average time between false alarms is 10 minutes and receiver bandwidth is 0.45MHz.

3. a) What is Doppler Effect? Derive expression for the Doppler frequency shift.
b) Explain FM-CW altimeter and multiple frequency CW Radar.

4. a) Define Blind Speed and what the use of delay line canceller is.
b) Briefly explain about range gated Doppler filters.

5. a) Describe automatic tracking of a target through range gating technique.
b) Describe sequential lobing type of error signal generation to track a target automatically.
c) Compare Monopulse tracker over Conical scan type tracker.

6. a) Write the characteristics of matched filter and derive the frequency response.
b) Derive the equation for matched filter receiver and explain the importance of different subsystems involved in it.

7. a) Distinguish between linear array and planar array.
b) Discuss in brief about series ***vs*** parallel feeds.
c) Explain about the applications of the array in Radars.

8. a) Explain about Electronic Counter-Counter Measures.
b) Explain Doppler-Frequency mode of synthetic aperture Radar.

CODE No.:10BT70421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

ADVANCED MICROPROCESSOR AND MICRO CONTROLLERS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the architectural differences between Intel 80186 and 80286 microprocessors.
b) Explain the Register Organization of 80286 microprocessors.

2. a) Explain the different additional addressing modes supported by 80386 over 80286.
b) Explain the cache management unit of 80486.

3. a) Contrast the Pentium and Pentium pro with 80386 and 80486 microprocessor.
b) Describe the operation of the branch prediction logic.

4. a) Draw and discuss the special registers used in Pentium IV and dual core microprocessors.
b) Write the advantages of dual core microprocessors.

5. a) Explain the internal and external memories of 8051 microcontrollers.
b) Describe the operation of counters/timers in 8051 microcontroller.

6. a) Explain the 8051 logic instructions for Bit-manipulation.
b) Discuss the interrupt control flow of 8051.

7. a) Explain Interrupt latency and Interrupt deadline.
b) What is meant by programmable Timers in the microcontrollers?

8. a) Explain hardware-memory map in Intel 80196 family MCU system.
b) Describe the 16/32 bit processors.

CODE No.:10BT70506

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

EMBEDDED SYSTEMS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Define embedded system and explain the steps in embedded system design process.

2. Explain about various serial data transmission modes.

3. Write details of the following instructions
a) MOVX b)SETB c)XRL d)SBB e)XCH

4. a) Explain about the usage subroutines in 8051 with a suitable example.
b) Explain about **acall** and **lcall** instructions with an example.

5. Explain the interfacing of D/A with 8051 microcontroller.

6. Explain timer functions and memory management.

7. Explain about PROM programmer, ROM Emulator, ICE and Monitors.

8. Explain the design steps of Elevator controller.

CODE No.:10BT71001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

ANALYTICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the sketch of a pH meter and explain its principle and working. What are the applications of a pH meter?
b) Compare Sodium, Silica and Hydrogen analyzers in all respects.

2. a) How do you classify the gas analyzers based on the principle of working?
b) Discuss briefly the different methods of estimation of hydro carbons.

3. a) What are the applications of Liquid Chromatography? Explain.
b) Explain the principle of Gas Chromatography.

4. a) Explain the principle and working of a medical oxygen analyzer.
b) Explain different detectors used in oxygen analyzers.

5. a) Discuss different sources of error in spectrophotometric measurements.
b) Explain the working of IR spectrophotometer.

6. a) Explain the working of atomic emission spectrophotometer.
b) What are the radiation sources used in atomic absorption spectrophotometers?

7. With neat block diagram, explain about the constructional details of NMR spectrometer.

8. a) Discuss the variation of count rate with voltage using suitable counter.
b) What is the dead time of the counter? Explain.

CODE No.:10BT71005

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

MEMS AND MICROSYSTEMS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write a note on multidisciplinary nature of microsystem design and manufacturing.
b) Can traditional manufacturing technologies be used in MEMS manufacturing? Substantiate with suitable reasons.

2. a) Explain the working principle of micro accelerometers.
b) Write a note on thermal sensors.

3. a) Explain about bending of circular plates with edge fixed.
b) Determine the amplitude and frequency of vibration of a 10-mg mass suspended from a spring with a spring constant $k = 6 \times 10^{-5}$ N/m. The vibration of the mass is initiated by a small "pull" of the mass downloaded by an amount $\delta_{st} = 5\mu m$.

4. a) Discuss the static bending theory applied to microsystems.
b) Explain the heat conduction process in multi-layered thin films.

5. a) Describe in detail the conversion of mechanical and electrical energies by piezoelectric crystals.
b) Describe the requirements of MEMS micropressure sensor packaging.

6. a) What is Oxidation? How Silicon dioxide can be produced using Thermal Oxidation Process?
b) With neat sketch, explain the principle of operation of CVD.

7. a) What are the steps involved in surface micromachining process.
b) Classify the various micro fabrication processes involved in micro manufacturing. Explain any one in detail.

8. a) List out the steps involved in assembly of microsystems.
b) Explain about three levels of micro-system packaging.

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

WEB PROGRAMMING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following HTML tags with suitable examples.
   i) **< OL >**
   ii) **< UL >**
   iii) **< DL >**
   b) What is a Style Sheet? Describe the different ways to add styles to a web page.

2. a) Describe the primitive data types that JavaScript uses.
   b) Explain how DHTML is different from the HTML.

3. a) What is DTD and give syntax for declaring an attribute in DTD?
   b) Explain about Sax and DOM.

4. What is a Servlet? Explain lifecycle of a Servlet. Illustrate with an example program.

5. a) How are prepared statements and Exceptions useful in JDBC? Elucidate.
   b) Write a Program to retrieve data from fields in database using SQL.

6. a) Explain MVC architecture with a neat diagram.
   b) Discuss JSP directive elements.

7. a) What are JSP tag extensions?
   b) Explain getter and setter methods with examples.

8. How do you integrate JSPTL into your JSP page?

CODE No.:10BT71204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

CRYPTOGRAPHY AND NETWORK SECURITY

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write a short note on security services and attacks.
b) Explain about Playfair cipher and Hill cipher techniques with example.

2. a) Explain AES algorithm.
b) Explain Key distribution scenario.

3. a) What are the requirements and applications of public key cryptography?
b) Write short notes on digital certificates.

4. a) Describe the approaches to public key management in PGP.
b) Explain in detail S/MIME certificate processing.

5. a) Explain the purpose of security policy database. Discuss about the general sequence for each IP Packet that has to be obeyed by outbound processing.
b) Discuss about various ISAKMP exchange types.

6. a) Explain different Alert codes defined in SSLV3.
b) What are the roles different participants in SET system?

7. a) Explain about Rule based Intrusion Detection.
b) Explain about Intrusion detection techniques.

8. a) Explain about IP address spoofing and tiny fragments attacks.
b) Explain Access Matrix and concept of trusted system.

CODE No.:10BT71208

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

SOFTWARE PROJECT MANAGEMENT

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the improvements suggested for basic waterfall model? Explain.
b) Boehm said that "Only about 15% software development effort is devoted to programming"; What other activities besides coding are equally important? Explain.

2. State and explain the principles of conventional Software Engineering.

3. a) What are the essential activities in construction and transition phases?
b) How do you evaluate the completion of each of the four phases in SW lifecycle?

4. a) Explain software architecture from management perspective.
b) List and explain all the top level workflows of software process.

5. a) Briefly explain the purpose of each of the sections in a software project plan.
b) What is the critical distinction between a milestone and deliverability?

6. a) Explain bottom-up approach of project planning.
b) What are the activities of software development team over the project life cycle?

7. a) Why are the metrics divided into management and quality indicators? Name the core metrics under each category.
b) Identify examples of each of the seven core metrics and state their purpose.

8. Discuss about the Command Center Processing and Display System.

CODE No.:10BT71222

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

SOFTWARE ARCHITECTURE

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Discuss about Software Process and Architectural Business Cycle.

2. a) Briefly explain about the behavior of pipes and filters.
b) Explain about layered system. What are the benefits of layered system?

3. What is Database Integration? Draw the Data Flow diagram for Batch Database.

4. Explain the features of world wide web.

5. Explain architectural patterns and structural pattern.

6. Implement Architecture of a System using Pip-And-Filter approach.

7. Explain architectural information is captured from an ADL.

8. Explain in your own perspective the following;
i) Organizational implications of product line.
ii) Evaluating a product line.

CODE No.:10BT71301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

NEURAL NETWORKS AND FUZZY SYSTEMS

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain McCulloch Pitts Model.
b) Realise the following logic gates using Mc Culloch Pitts Model
i) AND ii) NOR iii) Ex-OR iv) memory cell

2. a) Explain the learning strategies for artificial neural networks.
b) Explain the following learning rules for artificial Neuron.
i) Hebbian Learning Rule ii) Perceptron Learning Rule
iii) Delta learning rule iv) Correlation Learning Rule

3. a) Explain in detail about storage and recall algorithms of Hopfield networks.
b) Discuss the architecture of Full Counter Propagation Network with a block diagram.

4. a) Prove that BAM is unconditionally stable for any binary units.
b) The following vectors need to be stored in a recurrent auto associative memory:
$S_1 = [\,1\ 1\ 1\ 1\ 1\,]^T$
$S_2 = [\,1\ -1\ -1\ 1\ -1\,]^T$
$S_3 = [\,-1\ 1\ 1\ 1\ 1\,]^T$, Compute the weight matrix W.

5. a) Why fuzzy set theory is effective to tackle the problem of uncertainty? Justify.
b) Give and explain the properties of crisp sets. With a neat sketch of Venn diagrams, discuss about the operation of crisp sets.

6. a) Discuss the features of Membership function with the help of a neat sketch.
b) Find the defuzzified values for the fig.1 shown below using first of maxima and last of maxima.

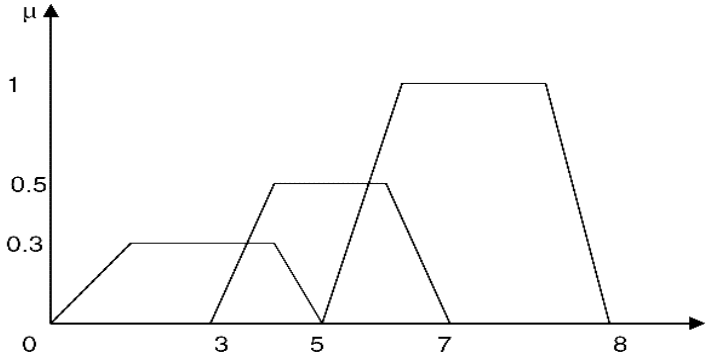


Fig.1

7. Develop the rule base considering three membership functions for controlling a second order system with step input using fuzzy logic controller.

8. a) Describe the design of fuzzy logic control with a temperature controller as an example.
b) Explain how ANN is used for process control.

❀ ❀ ❀

CODE No.:10BT71302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

PROGRAMMABLE LOGIC CONTROLLERS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the schematic of input modules of PLC.
b) Discuss about the programming formats of PLC.

2. a) Discuss the importance of Fail-Safe Circuits.
b) What are the input instructions and also explain the outputs in PLC Programming.

3. a) Explain the following;
i) NAND gate and relay and PLC equivalents
ii) NOT gate and relay and PLC equivalents
b) Discuss about ladder diagrams and sequence listings.

4. a) Explain about the general characteristics of PLC registers.
b) Explain the PLC counter function with one industrial application.

5. Write about PLC addition and subtraction with two examples each.

6. a) Write the PLC SKIP function and explain with suitable application.
b) Explain about PLC JUMP function.

7. Explain about PLC SEQUENCE function with and without TIMING.

8. Explain about PLC networks for CELL CONTROL.

CODE No.:10BT71501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

NETWORK PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain TCP/IP layering in detail with a neat sketch.
b) List and explain limitations on buffer sizes.

2. a) How do sockets work? List and explain any five socket primitives.
b) Explain the ways used to store the two bytes in a memory with suitable formats.

3. Explain the following scenario of server operations:
i) Crashing of server host
ii) Crashing and rebooting of server host
iii) Shutdown of server host

4. a) Discuss select ( ) and poll ( ) functions with necessary code.
b) Describe the limitations with close that can be avoided with shutdown function.

5. Briefly discuss about UDP Echo server and client.

6. a) Define Resolvers and Name servers and explain the use of RES_USE_INET6 resolver option.
b) Explain the use of **uname** function with an example.

7. a) Give an example application where FIFO can be used.
b) Explain about **shmget**, **shmat**, **shmdt, shmctl** functions.

8. Write notes on the following:
a) RPC Transparency issues
b) Terminal modes

CODE No.:10BT71502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

SOFT COMPUTING TECHNIQUES

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the classifications of Optimization problems.

2. a) What is Learning? Explain different types of Learning.
b) Write short note on ADALINE and MEDALINE.

3. Explain the various parameters in Back Propagation Networks.

4. With a neat block diagram, explain the architecture of ART1. Also explain its features.

5. Define Crisp sets with its fundamental concepts.

6. a) List out the properties of membership functions.
b) Explain in detail the methods employed for converting fuzzy form into crisp form.

7. Explain binary encoding for knapsack problem in detail.

8. Design a BAM network to associate letters T and O with bipolar input-output vectors. The target output for T is (1,-1) and for O is (1,1).The input patterns are

*	*	*
.	*	.
.	*	.
.	*	.

T

*	*	*
*	.	*
*	.	*
*	*	*

O

CODE No.:10BT71503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2015

ARTIFICIAL INTELLIGENCE

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe a state space in which deepening search performance much worse than depth-first search.
b) Prove that the breadth first search is a special case of uniform cost search.

2. a) What is uninformed search strategy? Explain any two uninformed search strategies in detail.
b) Define state space and search space. Give examples for each.

3. a) Write Forward chaining algorithm and explain with an example.
b) Write Minimax algorithm and interpret it to an example.

4. a) Explain unification algorithm in detail.
b) Explain the universal instantiation and existential instantiation in First Order Logic with example.

5. Explain about the internet shopping world.

6. a) Explain the method of handling approximate inference in Bayesian Networks.
b) Why multinomial Naïve Bayes(NB) can be used to better describe some contextual information in test mining? Please describe the key mathematical differences between multivariate NB and multinomial NB.

7. a) Write short notes on Explanation based learning with an example.
b) How statistical learning method differs from reinforcement learning method? Justify.

8. a) Write short notes on Statistical learning.
b) Present a Fuzzy sets for the following concepts. Let **U** be a reasonable age interval of human beings.
U = {0, 1, 2, 3, ... , 100}.

CODE No.:10BT61302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Advanced Supplementary Examinations June - 2015

ROBOTICS AND AUTOMATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. What are the techniques of automated material handling? What do you know about AGV and AS/RS.

2. a) Define work envelope, end-effector, load carrying capacity and degree of freedom of a robot.
b) Give five possible classifications of robots.

3. Explain working principle of laser, acoustic and tactile sensors. Also, identify the applications where each type of sensor is used.

4. Describe in detail about various types of Gripper mechanisms used in industrial robots with neat sketch.

5. Develop forward kinematic equations for a SCARA manipulator.

6. Program the robot to pick up two blocks (of different sizes) from fixed position on either side of a center position, and to stack the blocks in the center position. The larger block will always be on one side of the center and smaller block will always be on the other side of the center position. The smaller block is to be placed on top of the larger block.

7. For each of the following applications, what is a good choice for the type of electric motor used? Justify your choice.
i) Ceiling fan
ii) Electric trolley
iii) NC milling machine
iv) Electric crane
v) Disk drive motor
vi) Windshield wiper motor
vii) Washing machine
viii) Clothes dryer

8. Illustrate a robot cell loading and unloading die casting machine, a trim press and a quench tank all working together. Parts are fed to the chute for onward transmission to the part presenter from which the robots picks up the parts.

CODE No.:10BT70402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Advanced Supplementary Examinations June - 2015

DIGITAL IMAGE PROCESSING

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain how the following operations are used in the digital image processing
i) Set and Logical operations
ii) Array and Matrix operations
iii) Linear and Non-linear operations

2. State and prove following properties of 2D-DFT
i) Translation ii) Periodicity iii) Conjugate symmetry

3. a) Discuss Image sharpening with high pass masks.
b) Discuss Image sharpening with high boost filtering.

4. Give the expression for 2-D Butterworth High pass filter transfer function and sketch it. Explain its usefulness in Image enhancement.

5. a) Explain image restoration in the presence of noise.
b) Explain the concept of Constrained Least squares Filtering with respect to Image Restoration.

6. a) Explain about various edge detection techniques.
b) Explain how segmentation is used in motion estimation.

7. a) Define Compression ratio? Explain about Run length coding.
b) Write notes on image compression standards.

8. a) Describe the colour image sharpening process in detail.
b) Explain how HIS colour model can be converted to RGB and *vice versa.*

CODE No.:10BT70502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Advanced Supplementary Examinations June - 2015

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) Describe the phases in a tester's mental life.
b) Differentiate testing and debugging.

2. Explain the path testing in detail.

3. Discuss the data flow testing strategies in detail.

4. a) Explain Path testing, Statement testing, Branch testing criterion.
b) Explain with example how you handle different kinds of loops while testing.

5. a) Explain mean processing time of a routine with example.
b) Explain about path products.

6. Explain about the specifications in detail.

7. Explain the Node Reduction algorithm in detail.

8. a) Explain the steps white recording in analog mode using Win Runner.
b) Explain the steps in creating synchronization point into test script in Win Runner.

CODE No.:10BT71202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Advanced Supplementary Examinations June - 2015

MOBILE COMPUTING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is handover? Explain various types of Handover.
b) Explain limitations of Mobile devices.

2. a) How do you avoid the hidden and exposed terminal problem.
b) Explain the following:
i) FDMA ii) TDMA

3. a) Explain about IEEE 802.11 MAC Frames.
b) What is Hyper LAN? Explain Protocol Architecture of Hyper LAN.

4. a) How can DHCP be used for Mobility and support of Mobile IP.
b) What is Snooping TCP? What are the advantages of Snooping TCP?

5. Explain about caching invalidation mechanism in mobile environment.

6. a) Explain pull based data delivery mechanism in mobile computing.
b) What is selective tuning? Explain about directory method indexing in mobile computing.

7. a) Explain how Dynamic topology is realized in MANETs.
b) What is Least Interference Routing? Explain.

8. a) Describe the architecture of WAP.
b) Write short notes on **J2ME**.

CODE No.:10BT71301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Advanced Supplementary Examinations June - 2015

NEURAL NETWORKS AND FUZZY SYSTEMS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain briefly about the operation of a biological neural network.
b) List the various applications to artificial neural network.

2. a) Explain the different categories of learning.
b) Write short notes on Learning Vector Quantizer.

3. Explain in detail about training phases of full CPN.

4. a) Describe the architecture of ART1.
b) What are the applications of adaptive resonant theory?

5. a) Explain Max-Min Composition with example.
b) Explain fuzzy properties related to Intersection.

6. a) What are the steps employed in implementing fuzzy logic efficiently? Explain.
b) Explain the development of rule base and decision making system.

7. a) Explain simple Fuzzy Logic Control design.
b) What are the assumptions in Fuzzy Control System design?

8. a) Explain how a neural network is used in process identification.
b) Explain how Fuzzy Logic used in air conditioner control.

CODE No.:10BT80102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Advanced Supplementary Examinations June - 2015

ADVANCED FOUNDATION ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss various factors that affect the bearing capacity of a shallow footing. Also describe different components of the total settlement of shallow foundation.
b) A shallow continuous footing, 1.5 *m* wide, with its base at a depth of 1 *m* resting on a sand stratum. Determine the ultimate bearing capacity if the ground water table is located at a depth of 0.5 *m* below the ground surface. Consider γ_d**=17** kN/m^3**,** γ_{sat}**=20** kN/m^3**,** ϕ'**=38°,** c'**=0,** N_q**=60** and N_γ**=75**. Use *Terzaghi's analysis*.

2. a) What are different types of foundations? Explain with the help of sketches.
b) Design a square reinforced concrete footing for the following data:
Column load = 800 *kN*
Allowable soil pressure = 200 kN/m^2
Size of column = 0.4 *m* × 0.4 *m*.

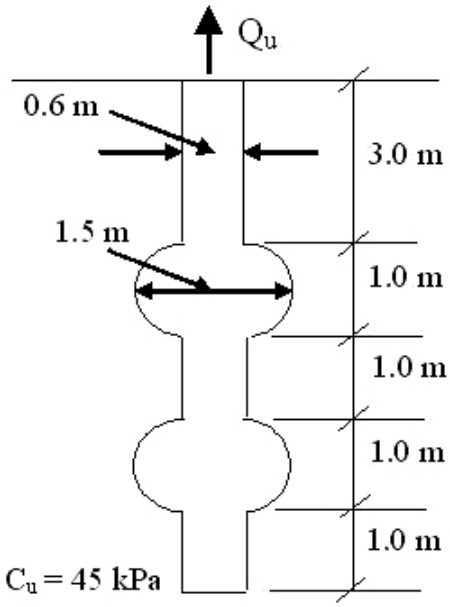
3. a) Discuss the various types of pile foundations. Explain how to determine the forces in laterally loaded piles.
b) A square concrete pile (35 *cm* × 35 *cm*) is driven into a homogeneous sand layer **(** ϕ**=30°,** γ**=17** kN/m^3) for a depth of 10 *m*. Calculate the ultimate load using *Meyerhof's* method. Consider K**=1.3,** δ**=18°,** $(D_b/B)_{cr}$**=7** and N_q**=55**.

4. a) State the problems in sinking of Wells and briefly describe any two remedial measures.
b) A circular well of 5 *m* external diameter and steining thickness of 1*m* is used as a foundation for a bridge pier is a sandy stratum. The submerged unit weight of sand is 9 kN/m^3 and the angle of shearing resistance is 300. The well is subjected to a horizontal force of 500 kN and a total moment of 4500 kN-*m* at the scour level. The depth of the well below scour level is 12 *m*. Check the lateral stability of the well, assuming it as light weight well.

5. a) How would you check the stability of an anchored sheet pile wall with free-end support? What is Rowe's correction?
b) An anchored sheet pile wall with free-earth support retains soil to a height of 8 *m*. Find the depth of embedment and the force in the anchor per meter of the wall. The anchor is provided at a depth of 2.5 *m* bellow the ground surface. Assume the water table is located 3*m* below the ground surface. Take γ**=16***kN*$/m^3$**,** ϕ**=35°,** γ'**=9** kN/m^3 and ϕ'**=35°.**

6. a) Explain the typical damage that a structure resting on expansive soil is likely to suffer.
b) What are the basic approaches used to reduce or prevent the effect of swelling on structures?

7. a) What are the limitations of the dynamic pile formulae?
b) Estimate the allowable pullout load of an under-reamed pile shown in the figure below to resist swell pressure of a footing.



8. a) Write a note on ship impact on piled wharf structure.
b) Explain the design of wall type breakwaters.

CODE No.:10BT80202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Advanced Supplementary Examinations June - 2015

DISTRIBUTION OF ELECTRICAL POWER

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the relationship between loss factor and load factor.
b) Classify different types of load and their characteristics.

2. a) What are the differences between primary and secondary distribution systems?
b) What are the factors that affect the choice of primary feeders?

3. Derive the voltage drop and power loss of non-three phase distribution systems and compare to the 3-phase balanced systems.

4. a) Explain the principle of operation of line sectionalizers.
b) What are the types of coordination procedures? Explain fuse to circuit breaker, coordination.

5. a) Explain the effect of shunt capacitors in distribution systems for power factor correction.
b) Write the procedure for finding the optimum capacitor location.

6. A 37.3 KW induction motor has a power factor 0.9 and efficiency 0.9 at full load, power factor 0.6 and efficiency 0.7 at half load. At no load, the current is 25% of the full load current and power factor 0.1.Capacitors are supplied to make the line power factor 0.8 at half load. With these capacitors in circuit, find the line power factor at:
i) Full load and
ii) No load

7. Explain the various factors affecting the distribution system planning.

8. a) Explain the importance of communication system in DA. What are the different types of communication systems for DA?
b) What are DA Communication System requirements? Explain any one.

CODE No.:10BT80401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Advanced Supplementary Examinations June - 2015

CELLULAR AND MOBILE COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operation of cellular systems.
b) Explain the concept of frequency reuse channels.

2. a) Explain the concept of Frequency Reuse Channels.
b) What is the need for Cell Splitting? Explain different types of Cell Splitting Techniques.

3. a) Describe how to use the parasitic elements which can reduce interference at cell site.
b) Discuss the effect of mechanically down tilting antenna on the coverage pattern.

4. a) What antenna is used for interference reduction and explain in detail?
b) Explain the concept set-up channels related to frequency management of cellular system.

5. a) Define the terms Effective radiated power, Broad side array, Collinear array and Directional array.
b) How interference can be reduced using Directional Antennas?

6. a) Why there is a constant standard deviation along a path-loss curve and also explain the straight-line path-loss slope?
b) Explain the general formula of a point-to-point model (Lee model) and also mention the merit of the point-to-point model.

7. a) What is handoff? Explain various types of handoffs.
b) Explain the general formula of dropped call rate.

8. Write short notes on the following:
i) Time Division Multiple Access Scheme.
ii) Signaling of GSM Channels.

CODE No.:10BT81001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Advanced Supplementary Examinations June - 2015

INDUSTRIAL ELECTRONICS

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain how cathode drift compensation is achieved in DC amplifiers.
b) Explain about the bridge amplifier using series drift compensation techniques and derive expressions for voltage gain.

2. a) Compare series and shunt voltage regulators.
b) Give the schematic circuit of monolithic voltage regulator and describe its working.

3. a) Neatly represent the basic structure and symbol of SCR.
b) Explain the principle of operation of SCR in detail.
c) Mention any three applications of SCR.

4. a) Explain single phase half wave and full wave converters in detail.
b) Define converter. What is its importance in industrial applications?
c) What are the differences between inverters and converters?

5. a) What is a Chopper? Explain the principle of operation of Step-down chopper.
b) With near diagram, explain the construction of TRIAC.

6. Explain about direct numerical control (DNC) system. Discuss the various types of DNC system.

7. a) What are the basic constituents of an industrial timing circuit? Describe the function of each constituent.
b) With the help of neat sketch, explain the principle of RC timer.

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.:10BT81201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Advanced Supplementary Examinations June - 2015

SERVICE ORIENTED ARCHITECTURE

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain about common pitfalls of adopting SOA in detail.

2. Explain the importance of messaging with SOAP and message exchange patterns in web services.

3. Write about Reliable Messaging.

4. Explain how service oriented principles inter-relate with illustrations.

5. a) Describe the process of agile strategy and discuss its pros and cons.
b) Explain any three configuration scenarios of service layer.

6. Discuss the step by step process of Service Modelling in detail.

7. Explain service-oriented design in detail.

8. Explain service oriented business process design.

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

MANAGEMENT SCIENCE

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

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

Answer any FIVE questions
All questions carry equal marks

1. Discuss F.W.Taylor's Management philosophy and clearly explain its merits and demerits in comparison with Henry Fayol's contributions.

2. a) Explain the salient features of classical theory of organization.
b) What are the advantages of departmentation?

3. a) Define plant layout. Explain briefly the principles of plant layout.
b) List the various forecasting techniques. Explain any two quantitative forecasting techniques.

4. a) Write short notes on:
i) Market Mix ii) Channels of Distribution
b) Discuss the objectives of Materials Management.

5. a) Explain the need for HRD in modern organization.
b) What is performance appraisal? What are its objectives?

6. A small maintenance project consists of the jobs in the following table. With each job is listed its normal time and a crash time in days. The cost in rupees per day of crashing each job is also given.

Activity	Normal duration (days)	Crash duration (days)	Cost of crashing Rs/day
1-2	9	6	20
1-3	8	5	25
1-4	15	10	30
2-4	5	3	10
3-4	10	6	15
4-5	2	1	40

a) What is the normal project length?
b) What is the optimum length if the overhead cost is Rs 60/day?

7. a) Define entrepreneur. How they are helpful to the society?
b) Write notes on entrepreneurial decision process.

8. a) Define TQM. Explain the elements of TQM.
b) What is the role of information technology in decision making?

CODE No.:10BT60405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

VLSI DESIGN

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With neat sketches, explain the Ion-lithography process.
b) With neat sketches, explain CMOS fabrication using P-well process.

2. a) What is threshold voltage? Derive the expression for threshold voltage for N-MOS transistor.
b) Why CMOS inverter is called a low power device? Explain.

3. a) Explain with suitable diagrams, the lambda based design rules.
b) Design a layout diagram for N-MOS inverter.

4. a) Derive the expression for channel capacitance of a MOS transistor in detail.
b) Explain about switch logic and alternate gate circuits.

5. a) Explain the construction of transmission gate based adder in detail.
b) Explain the operation of 8**X**8 barrel shifter with neat sketch.

6. a) Draw and explain the FPGA chip architecture.
b) Discuss FPGA routing techniques.

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) Regular/Supplementary Examinations April - 2015

ROBOTICS AND AUTOMATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Define the term automation and justify the reasons for automation.

2. a) State the laws of robotics.
b) With the illustration of line diagram, explicate basic components of a Robot system.

3. Explain the various drive system used with an industrial robot and compare their features, merits and demerits.

4. A permanent magnet DC motor is coupled to a load through a gearbox. If the polar moments of inertia of the rotor and load are *Jr* and J_i , the gearbox has a *N*:*M* reduction from the motor to the load, the motor has a starting torque *Ts* and a no-load speed ω_{max}, and the load torque is proportional to its speed *(Ti = kω),*
a) What is the maximum acceleration that the motor can produce in the load?
b) What is the steady state speed of the motor and the load?
c) How long will it take for the system to reach a steady state speed?

5. Program the robot to pick up two blocks (the blocks are of different sizes) from fixed positions on either side of a centre position, and to stack the blocks in the centre position. The larger block will always be on one side of the centre and the smaller block will always be on the other side of the centre position. The smaller block is to be placed on top of the larger block.

6. Briefly explain the Robot Programming Languages in detail.

7. Briefly explain automated guided vehicle system of robots with application in detail.

8. What factors are to be considered in choosing a robot for a specific application? Industrial applications of robots can be grouped into three categories, explain each category with tasks involved in each of them.

CODE No.:10BT70402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

DIGITAL IMAGE PROCESSING

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A common measure of transmission for digital data is the baud rate, defined as the number of bits transmitted per second. Generally, transmission is accomplished in pockets consisting of starting bit, a byte of information and a stop bit. Using this approach, answer the following:
   i) How many minutes would it take to transmit a 512X512 image with 128 grey levels at 300 baud?
   ii) What would the time be at 9600 baud?
   iii) Repeat (i) and (ii) for a 1024X1024 image 128 grey levels.

2. State and prove following properties of 2D-DFT.
   i) Translation ii) Periodicity iii) Conjugate symmetry

3. a) What is meant by Histogram of an image? Explain with an example, how the histogram equalisation will be done
   b) Explain first order and second order derivative filters in spatial domain.

4. a) What are smoothening and sharpening frequency filters? Explain each of them.
   b) Draw the block diagram of homomorphic filtering and explain.

5. a) Explain the need for image restoration.
   b) Explain about Wiener filtering.

6. a) What are the applications of image segmentation?
   b) Explain about edge detection.

7. a) Explain the encoding procedure in arithmetic coding.
   b) Discuss about Run length encoding. Write its advantages and disadvantages.

8. Discuss in detail about color fundamentals.

CODE No.:10BT70405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2015

EMBEDDED AND REALTIME SYSTEMS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define the terms 'System' and an 'Embedded system'. Give the classification of embedded systems.
b) Write notes on RT-level custom single purpose processor design.

2. a) Explain the concept of pipelining relevant to general purpose processors used in an Embedded system design.
b) What is the difference between Microcontroller and Digital signal processor?

3. a) Describe the program state machine model.
b) Explain the role of processes and threads in concurrent process model.

4. a) Explain the need for communication interfaces used in embedded systems by considering UART as an example.
b) Illustrate IEEE 1394 Firewire protocol with suitable example.

5. a) What is meant by kernel? Explain its architecture.
b) Explain the significance of resource sharing in RTOS.

6. Describe the following RTOs Components
a) Mailboxes
b) Message Queues

7. a) Explain about the Instruction Set Architecture.
b) Write notes on Linkers.

8. a) Describe with examples the parallel evolution of compilation and synthesis.
b) Discuss about hardware/software co-simulation.

CODE No.:10BT70502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

SOFTWARE TESTING TECHNIQUES

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. List and explain the various dichotomies.

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. a) Implementation of a transaction flow is usually implicit in the design of the systems control structure and database. Explain.
b) Write short notes on data flow testing basics.

4. Discuss nice domain and ugly domain.

5. a) Explain mean processing time of a routine with example.
b) Explain about path products.

6. a) Discuss three variable KV chart with an example.
b) Discuss four and more variables KV chart with example.

7. Explain the Node Reduction algorithm in detail.

8. a) List and explain the features of QTP.
b) Explain, how to synchronize test cases.

CODE No.:10BT71007

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

TELEMETRY AND TELECONTROL

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the principle and operation of hydraulic and optical telemetry system.

2. a) With a neat sketch, explain **dc** Synchro Telemetry system.
b) Explain about different types of fibres used in optical telemetry and sketch the index profile.

3. Explain in detail about FM and PM circuits as applied to telemetry.

4. Describe the expression for modulation in the power conveyed by the carrier and Power transmitted by upper and lower frequency bands. Find the condition for Maximum power in the A.M wave.

5. With a sketch, explain how radio telemetry is used in the measurement of temperature and motion in internal combustion engine.

6. What is the multimode graded index fiber and explain about it with necessary figures and equations?

7. Discuss in detail about;
a) Microwave spectrum and bands.
b) Applications of microwave telemetry.

8. Explain in detail about telecontrol using information theory.

CODE No.:10BT71202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

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. What are the elements present in GSM? Explain the handover process in GSM.

2. What is MAC? Compare and contrast MAC layer mechanisms.

3. a) What are the disadvantages of Wireless LANs?
b) Write the format of IEEE 802.11 PHY frame for FHSS and explain each component.

4. a) Describe how IP packet deliver to and from the mobile node is realized.
b) What are advantages and disadvantages of fast transmit/fast recovery schemes.

5. a) Describe the four states used in cache invalidation mechanism.
b) What are the different recovery models used in data recovery processes in mobile database systems.

6. a) Explain pull based data delivery mechanism in mobile computing.
b) What is selective tuning? Explain about directory method indexing in mobile computing.

7. What are the properties of MANETs? Explain security in MANETs.

8. a) Describe the architecture of WAP.
b) Write short notes on Midlets.

CODE No.:10BT71301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

NEURAL NETWORKS AND FUZZY SYSTEMS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Differentiate Supervised and Unsupervised Learning.
b) Explain Characteristics of ANN.

2. State and prove the perceptron convergence theorem.

3. a) Explain Hopfield network architecture and training algorithm.
b) What is CPN? Explain its training algorithm.

4. a) Explain BAM architecture.
b) Write short notes on adaptive resonant theory.

5. a) Write short notes on fuzzy operations.
b) Explain fuzzy properties related to Union.

6. a) What are the steps employed in implementing fuzzy logic efficiently? Explain.
b) Explain the development of rule base and decision making system.

7. a) Explain about fuzzy control systems.
b) Explain in detail about graphical techniques of interference.

8. a) Explain about process identification.
b) Explain how fuzzy logic is used for air conditioner control.

CODE No.:10BT80102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

ADVANCED FOUNDATION ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) How the bearing capacity of a footing on layered soil deposit is determined?
b) An eccentrically loaded rectangular footing of size 2.5 m **x** 3.5 m is placed at a depth of 1 m on a stiff saturated clay. The eccentricity is 0.2 m in each direction. The footing is loaded rapidly and the soil properties are **c** = 105 kN/m² and **γ** = 17.8 kN/m³. Compute the safe allowable bearing load on the footing if the factor of safety is 3.0.

2. *What* is "structural foundation"? *Design* a trapezoidal combined footing for two columns (30 *cm* × 30 *cm*) carrying column loads of 1200 *kN* and 900 *kN*, if centre to centre spacing of the two columns is 4 *m*. Take allowable soil pressure as 200 kN/m^2 and the length of footing as 5 *m*.

3. a) *What* is the necessity of pile foundation? Discuss on negative skin friction including its effect on the pile.
b) A precast concrete pile (35 *cm* × 35 *cm*) is driven by a single-acting steam hammer. *Estimate* the allowable load using (i) *Hiley formula* and (ii) *Danish Formula*.
Use the following data:
Maximum rated energy = 3500 *kN-cm*
Weight of hammer = 35 *kN*
Length of pile = 15 *m*
Efficiency of hammer = 0.8
Coefficient of restitution = 0.5
Weight of pile cap = 3 *kN*
No. of blows for last 25 mm drop = 6
Modulus of elasticity of concrete = $2 \times 10^7 kN/m^2$
Weight of pile = 73.5 *kN*
Assume F.S. = 4 and total elastic compression, $C = 0.0018\ Q_u$.

4. a) What are the various components of well foundation? Discuss about the minimum depth of foundation and grip length as applied to well foundation.
b) A well foundation of 6 m external diameter and 5 m internal diameter is sunk to a depth of 15 m in a deep deposit of sand. The average N value of sand is 20. What is the load the well can carry by bearing alone?

5. a) What are different types of sheet pile walls? Draw the sketches showing the pressure distribution.
b) Describe the equivalent beam method for the analysis of an anchored sheet pile.

6. a) How to classify the expansive soils? Discuss on preventive measures.
b) What are the foundation problems associated with black cotton soils? Describe the lime column technique to improve the characteristics of black cotton soil.

7. a) Explain the construction of under-reamed pile.

b) A single bulb under-reamed piles are required for the foundation of building to be constructed in an expansive soil. The centre of the bulb is placed at a depth of 4.5 m from the ground level. If the shaft diameter is 45 cm and the bulb diameter is 2.5 times the shaft diameter, determine the allowable load on the pile. Cohesive strength of clay is 75 kN/m^2. Neglect shaft friction.

8. a) Explain different types of marine structures.

b) Enumerate the design of rubble-mound breakwaters.

CODE No.:10BT80106

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2015

PRESTRESSED CONCRETE

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is the necessity of using supplementary or untensioned reinforcement in prestressed concrete members?
b) List the advantages and limitations of prestressed concrete.

2. a) Explain the principles of pre and post tensioning.
b) Discuss Magnel system with neat sketches.

3. a) Discuss about End Block and Anchorage Zone.
b) Sketch the typical arrangement of reinforcements in end blocks of post-tensioned prestressed concrete beams with single and multiple anchorages.

4. A prestressed concrete beam (span = 10m) of rectangular section, 120 mm wide and 300 mm deep, is axially prestressed by a cable carrying an effective force of 180 kN. The beam supports a total uniformly distributed load of 5 kN/m which includes the self-weight of the member. Compare the magnitude of the principal tension developed in the beam with and without the axial prestress. Assume any other missing data.

5. A composite T-beam is made up of a pre-tensioned rib 150 mm wide and 250 mm deep, and a cast in-situ slab 400 mm wide and 40 mm thick having a modulus of elasticity of 30kN/mm^2. If the differential shrinkage is 100×10^{-6} units, determine the shrinkage stress developed in the precast unit.

6. Design the pre-stressed concrete girder required to span between two points on the highway for the length of 20 kN/m. The allowable stress in concrete and steel is M40 grade concrete and f_{pk}=1600 N/mm^2.

7. a) Explain the advantages of using precast prestressed elements along with in-situ concrete.
b) Explain different types of composite construction with sketches.

8. a) Explain Concordant cable profile.
b) What is loss of prestress due to friction? What are the methods by which frictional loss can be minimized?

CODE No.:10BT80202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

DISTRIBUTION OF ELECTRICAL POWER

[Electrical and Electronics Engineering]

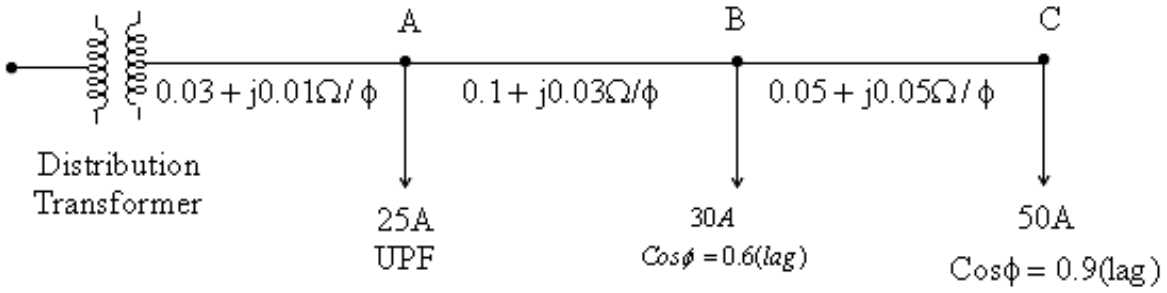
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain various types of load modeling and its characteristics.
b) A base load station having capacity of 20MW and a standby station having capacity of 18MW share a common load.
Find i) Annual load factor
ii) Use factor
iii) Capacity factor of the two power stations from the following data.
Annual standby station output: 6×10^6 kWh
Annual base load station output: 100×10^6kWh
Peak load on the standby station: 15MW
Hours of use of standby station during the year: 2500hrs.

2. Explain in detail the design considerations of radial primary distribution feeders with special emphasis on voltage levels and feeder loading.

3. Consider the three phase, three wire 250V secondary system with balanced loads at A, B and C as shown in figure. Determine (i) the total voltage drop in one phase of lateral (ii) the real power per phase for each load (iii) the reactive power per phase for each load and iv) the KVA output and load p.f. of the distribution transformer.



4. a) Explain the coordination procedure between recloser and fuse.
b) What are the types of common faults that occur in a distribution system? Explain them with proper line diagram.

5. a) Discuss the basic features of applicability of compensation through shunt and series capacitors in radial distribution systems.
b) The substation has a bank of three 1900 KVA transformers supply a maximum load of 8000 KVA at a lagging p.f. of 0.85, all three transformers have a thermal capability of 120% of the nameplate rating. It has already been planned to install 1000KVAR capacitor on the feeder to improve the voltage regulation.
Determine: i) Whether or not the additional capacitor is required to be installed on the feeder to decrease the load to the thermal capability of transformer.
ii) The rating of the additional capacitor.

6. a) What are the equipments used to control the voltages in distribution system. Discuss the effect of series capacitor on voltage control.
b) Write short notes on the role of AVB on voltage control.

7. a) What are the various factors that affect the distribution system planning?
b) Discuss the objectives of system planning.

8. a) Explain the need for distribution automation.
b) Explain about distribution management system.

CODE No.:10BT80301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2015

WORLD CLASS MANUFACTURING

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. What is World Class Manufacturing? Explain the evolution and benefits of World Class Manufacturing.

2. Give an over view of business excellence in the following strategies.
a) Bench marking
b) Value stream mapping

3. a) Explain Hall's frame work of value-added engineering.
b) Discuss practices of world-class manufacturing.

4. Brief the history of evolution of TQM and contributions of various persons.

5. How does the conceptual approach to ISO 14001 differ from ISO9001?

6. a) Elaborate the concept of design for six sigma.
b) What do you understand by customers take charge? Highlight what was happening a few decades back?

7. a) Highlight the contributions of Deming's approach to quality management.
b) What are the business intelligent tools? Explain briefly.

8. What do you understand by co-operative concurrent teams? Differentiate digital manufacturing, e-manufacturing and reconfigurable manufacturing.

CODE No.:10BT80303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2015

NON-TRADITIONAL MACHINING PROCESSES

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Classify various types of unconventional machining processes and provide examples in each type.
b) What are the competing processes best suited for working with the following materials and why?
i) Refractories, ceramics and glasses
ii) Super alloys and plastics

2. a) Discuss the applications, limitations advantages and disadvantages of ultrasonic matching. Enumerate various process parameters.
b) Explain in detail about Mechanics of metal removal process parameters.

3. Explain with the help of a schematic diagram the working principle of Abrasive Jet Machining (AJM) ? What are the advantages and limitations of the process?

4. a) Explain with neat sketch about Electro chemical honing and deburring process and mention their applications.
b) Write in detail about AJM and WJM. Also mention its applications and limitations.

5. a) Explain the working principle of wire EDM with neat sketch. Also explain how the stratified wire works.
b) Compare the relative merits and demerits of Electric discharge grinding and Electric discharge wire cutting processes and also mention its applications and limitations.

6. a) Explain with a neat sketch, the construction and working of LBM and mention their applications and limitations.
b) Compare the working principle, merits and demerits of Electron beam thermal and non thermal processes.

7. a) Explain the principle involved in chemical machining with suitable sketches.
b) Write in detail about Maskants, etchants, advantages and applications of electro chemical machining.

8. a) Highlight the use of rapid prototyping. Explain the process of stereo lithography for manufacturing prototype.
b) Discuss with neat sketch about magnetic abrasive finishing and abrasive flow finishing.

CODE No.:10BT80307

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2015

SUPPLY CHAIN MANAGEMENT

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the impact of Supply Chain decisions on the success of a firm.
b) Discuss different process views of a supply chain.

2. Identify the major drivers of supply chain performance and briefly discuss the role of each driver in creating chain strategy and competitive strategy.

3. a) How do static and adoptive forecasting methods differ?
b) When are quantity discounts justified in a supply chain? State the difference between the lot size based and volume based quantity discounts.
c) How do you choose optimal amount of cycle inventory in a supply chain?

4. a) Discuss the advantages of a push based and pull based supply chains with examples.
b) What is the impact of the internet on supply chain strategies?

5. a) What are the key challenges in adapting IT to improve the efficiency of the supply chain?
b) What are the barriers to successful partnerships in supply chains?

6. How the Information technology plays coordination role in supply chain?

7. You are the CEO of a small electronics manufacturing firm that is about to develop a global strategy. Would you prefer a speculative strategy, a hedge strategy or a flexible strategy? Would your answer to this question change if you were the CEO of a large electronics firm?

8. a) State and explain goals of supply chain information technology.
b) Discuss the implementation of ERP and DSS.

CODE No.:10BT80401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

CELLULAR AND MOBILE COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the uniqueness of mobile radio environment.
b) Describe the planning of a cellular system.

2. a) Explain co-channel interference and how to reduce co-channel interference.
b) Design an omni directional antenna system in the worst case for K=7 cell pattern.

3. a) Define Umbrella Pattern. What are the benefits of Umbrella Pattern?
b) Explain how interference can be reduced by using parasitic elements.

4. a) Derive power received in free space propagation model.
b) Discuss the Foliage loss.

5. a) Define the terms Effective radiated power, Broad side array, Collinear array and Directional array.
b) How interference can be reduced using Directional Antennas.

6. a) What is Sectorization? What are its advantages?
b) Explain the procedure for Channel accessing techniques from a mobile unit.

7. a) Explain handoff initiation and types of handoff based on signal strength and C/I ratio.
b) Explain MOHO and cell site handoff.

8. Write short notes on following:
a) 3G
b) UMTS
c) GSM architecture

CODE No.:10BT80402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

WIRELESS COMMUNICATIONS AND NETWORKS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is multiple access?
b) Explain the TDMA function in wireless network.

2. a) Explain in detail about Routing.
b) Write a short note on DIB fixed telephone network and wireless networks.

3. a) Explain the functioning of ATM with its basic architectural diagram.
b) Mention the advantages of common channel signaling over conventional signaling.

4. a) Explain MAC of WLAN.
b) Draw and explain IEEE802 protocol architecture.

5. a) Write about Narrow Band Microwave LANs.
b) Explain the IEEE802.11 Architecture and services.

6. a) List and explain the define Bluetooth baseband logical channels.
b) What are the differences between Wi-Fi (802.11b) and the Bluetooth wireless technology?

7. a) Explain how to increase the data rates in WLL.
b) Explain the practical Applications of Architecture Transfer mode.

8. a) Write the importance of different layers in networks.
b) Explain Link Manager.

CODE No.:10BT80406

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

SATELLITE COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss about history of evolution of satellites.
b) Write short notes on:
i) frequency allocations for satellite services.
ii) future trends on satellite communications.

2. a) What are kepler's three laws of planetary motion? What do the term perigee and apogee when used to describe the orbit of the satellite?
b) Explain about various methods for placing satellites into orbit and expendable launch vehicles.

3. a) Explain the operation of functional units in a communication subsystem.
b) With the help of bath tub curve, explain reliability or probability of device failure in satellite subsystem.

4. a) Derive an expression for the power received by earth station from satellite transmitter and also for carrier to noise ratio at the demodulator of the receiver.
b) Describe about Ku-band uplink and down link design with neat sketches of satellite TV distribution system.

5. a) Explain about TDMA frame structure.
b) What are the advantages of Demand Access Multiple Access techniques?

6. a) Present the necessity of LNA in an earth station receiver. Give the LNA specifications for a C-band receiver.
b) What are the various aspects considered in the design of large antennas?

7. a) Write about the orbital considerations of LEO satellite system.
b) Describe the coverage and frequency considerations of LEO satellite system.

8. a) Explain about the GPS position location principles.
b) With neat functional block diagram, describe about the GPS receiver operation.

CODE No.:10BT80502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

HUMAN COMPUTER INTERACTION

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) "A screen's layout and appearance affect a person in a variety of ways." Do you agree or not? Justify your answer.
b) Make a comparison a 1970's screen, a 1980's screen, a 1990's screen and beyond.

2. a) Explain the design goals in creating a user interface. Explain the role of usability testing in user interface design.
b) Explain in detail about the following principles of using interface design.
i) Clarity ii) Compatibility

3. Give a detailed note about the following important human characteristics in user interface design.
a) Mental models b) Movement models c) Foveal and peripheral design.

4. a) How to organize screen elements? Explain in detail.
b) Discuss how the screen navigation and flow are required for effective user interface.

5. a) What are the different types of windows? Explain.
b) Explain the guidelines for window operations.

6. a) What are the influences on icon usability?
b) Give a brief note about icon animation and audition.

7. Give a brief note on:
i) Interface mockup tools
ii) Transition diagrams with suitable examples

8. a) List various types of interaction tasks for pointing devices.
b) Explain about the Display technology.

CODE No.:10BT80504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

CLOUD COMPUTING

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Mention any two services on each of following :
i) Network Edge ii) Customer Edge iii) Data Center Edge
b) Explain various phases of SLA Lifecycle.

2. a) How Distributed computing is related to Cloud computing.
b) What are the different Cloud applications?

3. a) Write short notes on Cloudonomics, CAPEX, OPEX and SLA.
b) Explain the Map Reduce Concept with neat diagram, algorithm, example and execution overview.

4. List and explain different Virtualization technologies in brief.

5. a) What are the problems with the use of Network for providing Cloud computing service?
b) How network security is provided in Cloud environment.

6. a) What kind of disasters can occur in the Cloud and how to handle them?
b) What are the costs involved in planning and not-planning disaster recovery in Cloud environment.

7. a) Write short notes on the following: Grid Computing, Edge Computing and SOA.
b) Illustrate Cloud Computing Stack and Cloud deployment models.

8. Discuss the following in brief :
a) Google App Engine.
b) Graph Reduction
c) OBIEE

CODE No.:10BT81001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

INDUSTRIAL ELECTRONICS

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain with circuit diagram the operation of cascade amplifier.
b) Draw the circuit and describe the working of differential DC amplifier using Op-Amp.

2. a) Draw the block diagram of a series voltage regulator and give the function of each constituent unit.
b) Classify drift techniques for protection and briefly explain them.

3. a) Describe the method of Class A commutation or self commutation of SCRs.
b) Draw the commutation circuits and current waveforms for
i) Load resistor R in series with capacitor C.
ii) Load resistor R in parallel with capacitor C.

4. a) Define Inverter. What are the different types of inverters?
b) What are the requirements of practical inverters?
c) Explain the single phase inverters in detail.

5. a) Discuss why three phase to single phase cycloconverter requires positive and negative group phase controlled converters. Under what conditions the groups work as inverters or rectifiers? How the firing angles of the two converters are controlled?
b) Explain the volt-ampere characteristics of DIAC.

6. a) Explain briefly about switching sequence in 4-phase stepping motor.
b) List out the various characteristics of data processing unit.

7. a) What are the basic constituents of an industrial timing circuit? Describe the function of each constituent.
b) With the help of neat sketch, explain the principle of RC timer.

8. Explain the following applications of induction heating.
a) Surface hardening of steel
b) Annealing of brass and bronze items
c) Brazing

CODE No.:10BT81201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

SERVICE ORIENTED ARCHITECTURE

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) How services interrelate and communicate in SOA? Discuss with examples.
b) Explain the common pitfalls of adopting SOA.

2. Explain the concept of orchestration and choreography by providing an appropriate example related to business process.

3. Write about Meta Data Exchange in detail.

4. Explain the Common Principles of Service Orientation in detail.

5. Discuss SOA delivery strategies.

6. Explain with a suitable example, contrast service modeling approaches.

7. a) Write about service interface design tools.
b) Describe the step-by-step process of application service design.

8. What are the problems solved by layering services?

CODE No.:10BT82301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

ANIMAL CELL SCIENCE AND TECHNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Define "cell lines". Discuss the origin, characteristics and maintenance of continuous cell lines.

2. Describe the following:
a) Equipment required for animal cell culture.
b) Techniques used in cell culture.

3. Explain the different materials required for animal cell culture.

4. Write notes on the following:
a) Types of Cell lines.
b) Measuring viable cells.

5. Explain Tissue engineering with any one example.

6. Give an account on :
a) Organ culture
b) Measurement of cell death

7. Describe the mechanism involved in Apoptosis.

8. Give an account of three dimensional cultures.

CODE No.:10BT82304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

FOOD SCIENCE AND TECHNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Give an account of Malnutrition in India.

2. Write in detail about the effect of processing on functional properties and nutritive value of proteins and amino acids of food.

3. Briefly comment on microorganisms associate with meat products and its preservation methods.

4. Define food spillage. What are the general principles underlying the spoilage of foods and describe them?

5. Define fermentation. Explain about the role of fermentation technology in milk and cereal based products.

6. What are the different types of sampling techniques we use in the analysis of food materials? Explain.

7. Define food packaging. Explain in details the types and properties of food packaging materials.

8. Explain in details about the various food laws and standards governing the quality of food products.

CODE No.:10BT82307

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2015

METABOLIC ENGINEERING

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain basic concepts in Metabolic Engineering.
b) Write about Jacob and Monad model of Enzyme regulation.

2. What are the mechanisms for regulation of biosynthesis of amino acids at the whole cell level?

3. Write an essay on biosynthesis and regulation of secondary metabolites.

4. Write about different types of Biotransformation. Add a note on the factors influencing them.

5. Write a brief introduction on secondary metabolites and explain the biosynthesis and regulation of secondary metabolites.

6. Explain the following:
a) Integration of metabolism.
b) Thermo dynamics of cellular reactions.

7. Give an account of metabolic pathway modelling.

8. How metabolic engineering is useful in agriculture and medical fields?

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

MANAGEMENT SCIENCE

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Identify the contributions of F.W Taylor and Henry Fayol to the Management Science.
b) What is the need for systems approach to management? Explain.

2. State the different types of organizations. Explain any two of them stating their advantages, disadvantages and how these can be adoptable to Modern Firms.

3. a) Explain briefly the basic principles involved in preparing the layout of any industrial plant indicating the important techniques available for the purpose.
b) The data given below shows the details for the inspection of 10 consecutive batches:

Batch No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
No. of pieces inspected	**151**	**208**	**174**	**212**	**181**	**162**	**199**	**205**	**220**	**166**
No. of defectives	**8**	**7**	**4**	**5**	**10**	**5**	**7**	**6**	**8**	**4**

Construct a chart showing the control and warning limits.

4. a) Discuss the functions of Marketing.
b) State the objectives of Materials Management.

5. a) Enumerate the assumptions of McGregor's theory of 'X' and 'Y'.
b) What is job evaluation? Explain the methods of job evaluation.

6. The following is the project schedule.
a) Draw the network and calculate the length and variance of the Critical path.
b) What is the probability that the jobs on the critical path will be completed with a due date of 40 days?
c) What due date has 94% chance of being met?

Activity	**OT**	**MLT**	**PT**
1-2	3	6	15
2-3	6	12	30
2-4	5	11	17
3-4	3	9	27
3-5	1	4	7
5-6	2	5	8
3-6	4	19	28
4-6	2	5	14

7. a) Explain the factors that contribute to the failure of an entrepreneurial venture.
b) State the steps to be taken to promote women entrepreneurs in our country.

8. a) What is TQM? Explain its elements and state its advantages.
b) Write short note on Enterprise resource planning.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

OBJECT ORIENTED PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write a C++ program by defining a class EMPLOYEE containing the following members:
Data Members: Employee_Number, Employee_Name, Basic, DA, IT, Net_Salary
Member functions: read() - to read data, Calc() - to calculate Net_Salary and display()- to print data members.
(DA=52% of Basic and IT=30% of gross salary).
b) Illustrate the use of objects as function arguments in C++ with an example.

2. a) Illustrate the use of Virtual function with "Figure class" (combination of square, circle and triangle) using C++ code.
b) State the application of Constructor and Destructors.

3. a) Write a recursive program in Java to find the factorial of numbers.
b) Discuss how type conversion and casting is supported in Java.

4. a) Write a Java program that shows how the salary computation differs for Employee, Managers and Executive Manager using Inheritance.
b) Are inner classes useful? Secure? How?

5. a) Briefly discuss try, catch, throw and finally keywords in exception handing in Java.
b) Write a program to create a package named **`p1`** and implement this package in **`ex1`** class.

6. a) Write a Java code to create multiple bank accounts and transfer the amount from one account to another using threads.
b) Compare and contrast synchronized with unsynchronized thread.

7. a) Briefly discuss the class hierarchy for Panel and Frame in AWT.
b) Write a program that has Menubar and also a quit option and if the user clicks the quit option the applet should quit.

8. Explain with a sample program for the JFrame.

CODE No.:10BT51202 **[SVEC10-RA]**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10-RA) Regular Examinations November - 2014

COMPUTER GRAPHICS

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the architecture of raster display.
b) How are the different shades of color generated on the RGB monitors?

2. a) i) Get transformation matrix in 2-D for rotation about a pivot point.
ii) Discuss about the shear transformation in brief.
Write transformation matrices for x-shear and y- shear about the line y=0 and x=0.
b) Express the composite transformations with proper examples.

3. a) What are the matrix representations of:
i) translation ii) rotation iii) scaling transformation techniques
b) Explain the shear and composite transformations.

4. a) i) Explain various coordinate system in 3D viewing with a real time example.
ii) Write down the fundamentals of vector graphics.
b) Develop 2D-transformation matrices for scaling, rotation and translation with proper examples.

5. a) Explain Hermite method of curve generations.
b) Discuss the necessary factors contributing to intensity calculations. Give basic illumination models.

6. a) Distinguish between parallel and perspective projections.
b) Using the origin as the center of projection derive the perspective transformation onto the plane passing through the point $R_0(x_0,y_0,z_0)$ and having the normal vector $N = n_1I + n_2J + n_3K$.

7. a) Write about area subdivision algorithm for back face detection.
b) What happens when two polygons have the same Z-value and the Z-buffer algorithm is used?

8. a) Illustrate fractal and give any two examples of fractal in detail.
b) Express in detail the Hilbert's curve with appropriate examples.

CODE No.:10BT60405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

VLSI DESIGN

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With neat sketches, explain the processing steps involved in the fabrication of NMOS transistor.
b) Distinguish between diffusion and ion implantation techniques for doping of impurities.

2. a) Obtain the drain-to-source current I_{ds} versus drain-to-source voltage V_{ds} relationship for N-MOS enhancement mode transistor in non-saturation and saturation regions.
b) What is Latch-up in CMOS circuits? Explain how to avoid this problem.

3. a) Illustrate the λ based design rules for wires.
b) Describe scaling limitations for Substrate doping and Miniaturization.

4. a) Derive the expression for Sheet resistance R_s apply this to Transistor channels and calculate CMOS Inverter Resistance.
b) Justify Transmission gate is good for Switch Logic.

5. a) Describe the operation of Barrel Shifter.
b) Draw and explain Carry Select Adder.

6. a) Describe the functionality of PLA with respect to Architecture, Pre-charged gates and delay.
b) Illustrate the semi custom design flow.

7. a) What are various constraints in synthesis process?
b) With the help of block schematics, explain about the attributes in synthesis process.

8. Explain the following:
i) Need for Testing ii) Delay Fault Testing with example iii) design strategies for Test

CODE No.:10BT60503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

DATA WAREHOUSING AND DATA MINING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define Data Warehouse and write how it differs from databases.
b) Briefly describe the similarities and the differences of star schema and fact-constellation schema.
c) Define data cube and write its building strategies.

2. a) Discuss OLTP and OLAP in detail with examples whenever necessary.
b) What are major differences between OLTP and OLAP?

3. a) Normalize the data : 200, 300, 400, 600 and 1000 using
i) min-max normalization by setting min=0 and max =1.
ii) z-score normalization
b) Explain various methods used for data smoothing.
c) Illustrate data reduction strategies.

4. a) How can you improve the efficiency of Apriori algorithm? Explain.
b) What are the various kinds of association rules?

5. a) Discuss the issues regarding to the classification and prediction.
b) Discuss the following terms.
i) Sensitivity ii) Specificity

6. a) Explain Grid-based clustering methods.
b) Write and explain the k-means algorithm.

7. a) Explain Sequential Pattern Mining Problem and design an Apriori-kind algorithm to extract sequential patterns.
b) What is time series analysis? What is n-series?

8. a) What are the three types of dimensions in a spatial data cube?
b) What kinds of associations can be mined in multimedia data?
c) Discuss the methods for text retrieval.

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

COMPUTER NETWORKS

[Electronics and Communication Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List out the similarities between OSI reference model and the TCP/IP reference model.
b) Explain the any five basic service primitives for connection-oriented service.
c) List two advantages and two disadvantages of having international standards for network protocols.

2. a) Explain how microwave communication works.
b) Three packet-switching networks each contain n nodes. The first network has a star topology with a central switch, the second is a (bidirectional) ring, and the third is fully interconnected, with a wire from every node to every other node. What are the best-, average- and worst-case transmission paths in hops?

3. What are the basic functions of the data link layer? Write down the basic features of HDLC protocol? Could HDLC be used as a data link protocol for a LAN? Justify.

4. a) How the basic bitmap protocols works.
b) What are the different types of cables used in Ethernet?

5. a) How hierarchy is used in routing algorithms.
b) Explain the working of distance vector routing algorithm.

6. Elucidate various fields in TCP header and UDP header with neat diagram.

7. a) What are the protocols used for E-mail? Explain how they work.
b) What is the difference between static and dynamic web document?

8. With relevant example discuss substitution and transposition ciphers.

CODE No.:10BT70101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

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 an outcrop which is **0.9 m** above the general ground level. Take focal length equal to **0.164** and photo scale factor is **1: 5000**.

2. a) Discuss the signature curves of water, vegetation and soil.
b) Explain whiskbroom scanner system.

3. a) Explain in detail the different platforms used in remote sensing.
b) Calculate the orbital period for satellite which is orbiting the earth at an altitude of **817 km** from the earth's surface. Consider the Earth's radius = $\mathbf{6.38\times10^{6}\ m}$, Universal gravitational constant = $\mathbf{6.67\times10^{-11}NM^{2}/Kg^{2}}$ and mass of the central body is $\mathbf{5.98\times10^{24}}$ kg.

4. a) Describe Components and functions of GIS.
b) What is GPS? Explain the concept of GPS.

5. a) Discuss various data compression methods used for raster data storage.
b) Explain the characteristics of UTM projection.

6. a) What are the logical operators of vector overlay? Explain.
b) Write the advantages and disadvantages of Vector and Raster methods.

7. The Nellore Municipal Corporation wants to estimate the losses due to recent cyclone. Explain the role of Remote Sensing and GIS in such activity.

8. Explain the application of RS-GIS for
a) Inland water quality survey and management.
b) Bathymetry.

CODE No.:10BT70102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

ENVIRONMENTAL ENGINEERING - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following:
i) Sullage ii) Refuse and iii) Garbage
b) Describe conservancy and water-carriage systems and explain their relative advantages and disadvantages.

2. a) What is design period? Explain the importance of design period while estimating the flows for sewer design.
b) Differentiate between circular and egg shaped sections. Present step by step procedure adopted for design of sewer sections.

3. a) What is BOD and COD? What is their significance in sewage treatment?
b) What is population equivalent? List out the chemical characteristics of sewage and explain the method of estimation of ammonia.

4. a) Sketch the sequence of Units in a wastewater treatment plant and indicate the objectives of each Unit in sequence.
b) Design screens for a population of 200,000 with water supply of 180 lpcd. Assume depth of flow = 60 cm and velocity = 75cm/s. Provide storage for 15days and sketch your design.

5. a) Differentiate the attached growth process and suspended growth process.
b) Design an aeration tank of conventional activated sludge process to treat the sewage from a city with a population of 50,000. The expected rate of flow of sewage is 150 l/person/day. The BOD_5 at 20°C of the sewage is 300 mg/l. The MLSS is 3000mg/l. The treated effluent is to be disposed off into a nearby stream.

6. a) Discuss the process of sludge digestion indicating changes occurring in each stage of the process.
b) Write a detailed note on waste water disinfection.

7. a) What is oxygen sag curve? State the Streeter and Phelph's formulations to determine the critical DO deficit, its point of occurrence on the downstream direction of the disposal of wastewater into a stream.
b) Design a septic tank for a community with a population of 50 numbers. The sewage flow is 135 l/person/day. The desludging period is 3 years. Assume the length to width ratio of 3.5:1.

8. a) Discuss the various methods adopted for disposal of municipal solid wastes and their possible environmental impacts.
b) Write a detailed note on biomedical wastes. What additional precautions are necessary while disposing biomedical wastes?

CODE No.:10BT70103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

STEEL STRUCTURES - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Design a section of a plate girder to carry a uniformly distributed live load of 50kN/m and a dead load 50 kN/m over a span of 18m. A full lateral support is provided to the compression flange. Also design curtailment of flange plates.

2. Design the central cross section of a welded plate girder for 18m span simply supported beam carrying a UDL of 40KN/m. Design the vertical stiffeners.

3. Design the member of a tubular truss using IS 1161 grade St**.**35 steel for the tube. The principal rafter in a round tubular truss carries a maximum force of 110kN. A tension member meeting at right angles to the principal rafter carries a force of 30kN.

4. Four members of a truss are meeting at a particular joint. Two of them are in a straight line, 3m long and carrying a compressive force of 250 KN each. The remaining two ties are orthogonal to each other and equally inclined to the struts. Tension in the Ties is 180 KN. Length of each tie member is 2**.**85 m. Design the tubular members and the joint.

5. Design a gantry girder for the following data:

Crane capacity	: 250 KN
Self weight of the crane girder	: 200KN
Self weight of the trolley, motor and hook	: 40KN
Minimum approach for the crane hook	: 1.0 m.
C/C distance between gantry rails	: 1.2 m.
Span of the gantry girder	: 8 m.
Weight of the rail section	: 300N/m.

6. Design a pressed steel tank to carry 120000 liters of water. The tank is supported at a height of 12m above the ground level. Size of pressed plates available is 1**.**25m × 1**.**25m and height of the tank is restricted to 2**.**5m. Sketch the details of the design.

7. a) What are the advantages of composite construction and explain the different types of shear connectors.
b) Discuss the design of composite beam with shear connectors.

8. A uniform beam of length 12 meters is simply supported at the ends and is subjected to uniformly distributed load of w/m length. If the fully plastic moment is 60 kN/m, what is the maximum possible load of **w** at collapse?
i) If the beam is supported at the centre.
ii) If the beam has one prop at 4 m from right supports.

CODE No.:10BT70104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

TRAFFIC ENGINEERING AND MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Show the graphical relations between fundamental parameters of traffic highlighting critical points of interest.
b) On a particular day along a section of a highway, vehicles were observed be maintaining an average spacing of 8 meters and average time headway of 2**.**5 seconds. Determine the macroscopic parameters of traffic.

2. a) Write the procedure for conducting the moving observer method and also mention the advantages of this method.
b) The spot speeds at a particular location on a highway are known to be normally distributed with a mean of 80 K.P.H. and a standard deviation of 15 K.P.H. What is the probability that if a sample of 100 vehicles are tested that mean speed observed will exceed 75 K.P.H.?

3. a) Define Highway Capacity and Service Volume. What factors influence Highway Capacity? Explain.
b) What are the types of On-street Parking facilities available? Describe them with the help of neat sketches.

4. a) Write the procedure for the design of fixed time traffic signals at cross roads by Webster's method.
b) The average normal flow of traffic on cross roads A and B during design period are 400 and 250 **pcu** per hour; the saturation flow values on these roads are estimated as and 1000 **pcu** per hour respectively. The all-red time required for pedestrian crossings is 12 secs. Design two phase traffic signal by Webster's method.

5. a) What are the major pollutants released into the atmosphere by road traffic? What are their adverse effects? How can these emissions can be controlled? Explain.
b) Discuss about the methods to reduce noise pollution due to road traffic.

6. a) Explain different types of Pavement markings with neat sketches.
b) Explain Lane markings and Object markings with neat sketches.

7. a) Discuss about different causes of road accidents.
b) Briefly discuss about Road Safety Audit.

8. Write short notes on:
a) Intelligent Transport System.
b) Traffic forecasting techniques.
c) Exclusive bus lanes and traffic calming.

CODE No.:10BT70107

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations November - 2014

DESIGN AND DRAWING OF IRRIGATION STRUCTURES

[Civil Engineering]

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

Answer any ONE question
All questions carry equal marks

1. Design the surplus work of a tank forming part of a chain of tanks. The combined catchment area of the group of tanks is 25.89 sq. kilometers and the area of the catchment intercepted by the upper tanks is 20.71 sq. kilometers. It is decided to store water in the tank to a level of +12.00 meters above M.S.L (Mean Sea Level) limiting the submersion of foreshore lands up to level of +12.75 meters above M.S.L . The general ground level at the proposed site of work is +11.00 meters and the ground level below the proposed surplus slopes off till it reaches +10.00 meters in about 6 meters distance. The tank bund has a top width of 2 meters at level +14.50 with 2.1 side slopes on either side. The tank bunds are designed for a saturation gradient of 4:1 with 1 meter clear cover. Provision may be made to make kutcha regulating arrangements to store water up to M.W.L at times of necessity. The foundations are of hard gravel at a level of 9.50 meters near the site of work.

Draw the Plan (half at top and half at foundation level) and longitudinal section.

2. Design a regulator -cum -road bridge with the following data. Hydraulic particulars of canal upstream :

Full supply discharge	: 20 cubic meters/second
Bed width	: 15 meters; Bed level : +40.00
F.S. depth	: 2.00 meters; F.S.L.: +42.00
Top level of bank	: 43.00

The right bank is 5 meters wide and left is 2 meters wide. Hydraulic particulars of canal downstream:

Full supply discharge	: 16 cubic meters/ second
Bed width	: 15 meters; Bed level: +40.00
F.S. depth	: 1.75 meters; F.S.L.:+41.75
Top level of bank	: +42.75

Top widths of banks are the same as those on the upstream side. The regulator carries a road way single lane designed for I.R.C. loading class 'A'. Provide clear freeboard of one meter above F.S.L. for the road bridge.

Good foundation soil is available at + 39.00
Assume the ground level site as +42.00.

Draw the Plan (half at top and half at foundation level) and longitudinal section.

CODE No.:10BT70111

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

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. Soils from different locations have the following properties. Identify the problems and suggest proper ground improvement methods and justify the same.
i) Site 1: Liquid Limit = 65, Plastic limit =32; Shrinkage Limit = 14. FSI = 110%. LIG houses to be built.
ii) Site 2: SPT N increase from 3 at 1.5 m depth to 12 at 12.0 m. The site is in Assam where a refinery is to be built in the site.

3. a) Discuss the method of dewatering by open sumps and ditches with the help of neat sketches.
b) Explain about stone and lime columns.

4. a) What are various types of admixtures commonly used to stabilize soils?
b) What are the benefits of cement stabilization?

5. a) Provide a schematic of a ground anchor and show its various components.
b) Briefly explain how a soil nail stabilizes an unstable slope.

6. a) Describe the reinforced earth with its principles.
b) Discuss the design principle of reinforced earth.

7. a) Explain with suitable examples the principle involved in geo-textile material as reinforcement for improving the bearing capacity of soil.
b) Discuss the degradation properties of geo-membranes and geo-grids.

8. a) Discuss the engineering tests usually conducted to assess the swelling potential of expansive soils.
b) Describe the under reamed pile foundation construction.

CODE No.:10BT70201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

SWITCHGEAR AND PROTECTION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Express unbalanced phase currents in a 3-ϕ system in terms of symmetrical components.
b) Derive an expression for fault current for double line -to- ground fault by symmetrical Components method.

2. a) What do you understand by 'switch gear'? Enumerate various types of switchgears.
b) In a system of 132kV, line-to-ground capacitance is 0.01μF and the inductance is 5H. Determine the voltage appearing across the pole of a circuit breaker if a magnetizing current of 5A (instantaneous value) is interrupted. Determine also the value of resistance to be used across the contacts to eliminate restriking voltage.

3. a) What is meant by a relay and give the main features of a good protective system? Explain briefly i) Main a primary protection ii) Back up protection
b) Describe the essential features of a protective relay with reference to reliability, selectivity, speed of operation and discrimination.

4. What do you understand by amplitude comparator and phase comparator? Prove the duality between them with the help of phasor diagrams.

5. a) Explain with a diagram, the application of the Merz-Price circulating current system to the Protection of alternators.
b) Discuss earth fault protection for transformers.

6. a) Explain a scheme of protection for ring mains.
b) What are the requirements of protection of lines?

7. a) Discuss the merits of
i) Solid grounding ii) Resistance grounding
b) Explain the phenomenon of "arcing grounds".

8. Explain the construction and principle of operation of valve type and zinc oxide lightning arrester.

CODE No.:10BT70202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

POWER SYSTEM OPERATION AND CONTROL

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is an incremental fuel cost? How is it used in thermal plant operation?
b) A power system with two generating units supplying a total load of 110 MW. The incremental fuel cost characteristics of two units are

$$IC_1 = 15+0.08P_{G1}$$

$$IC_2 = 13+0.1P_{G2}$$

Determine the saving in fuel cost in Rs/hr due to economic scheduling as compared to equal distribution of the same load between the two units. Neglect the losses.

2. What are the important points for the solution of economic load dispatch problems, when transmission losses are included and coordinated?

3. Derive expression for optimal short term scheduling of hydro thermal power plant.

4. a) Derive the model of a speed governing system and represent it by a block diagram.
b) Two governors of rating 100MW and 200MW are operated with a droop characteristics of 6**%** from no- load to full load. Determine the load shared by each governor, if a load of 270MW is connected across the parallel combination of those generators.

5. a) With a neat block diagram, explain economic dispatch control for load frequency control.
b) Briefly explain control area concept and control area error.

6. a) Draw the block diagram of load frequency control in two-area control system and explain.
b) Derive an expression for steady-state change of frequency and tie-line power transfer of a two-area power system.

7. a) Explain the advantages and disadvantages of different types of compensating equipment for transmission system.
b) What is load compensation? Discuss its objectives in power system.

8. What are the various entities of deregulated power system and explain in detail about their functional operations?

CODE No.:10BT70203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

POWER SYSTEM ANALYSIS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Determine the bus admittance matrix for the parameters of a 4-bus power system given in Table.I

line	Line impedance (p.u)	Line charging admittance (p.u.)
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

Table.I

b) What are the advantages of per unit computations?

2. Derive the equations for finding the elements of the bus Impedance matrix.
i) When the added element is a Branch ii) When the added element is a Link.

3. Figure 1 shows the one-line diagram of a simple three-bus power system with generation at buses 1 and 3. The voltage at bus 1 is $V_1 = 1.025\angle 0^\circ \ pu$. Voltage magnitude at bus 3 is fixed at 1.03 pu with a real power generation of 300 MW. A load consisting of 400 MW and 200 MVar is taken from bus 2. Line impedances are marked in per unit on a 100 MVA base. Neglect line resistances and line charging susceptances. Determine the phasor values of V_2 and V_3 keeping $|V_3| = 1.03 \ pu$ for two iterations using Gauss-Seidel method and initial estimates of $V_2^{(0)} = 1.0 + j0.0 \ pu \ and \ V_3^{(0)} = 1.03 + j0$.

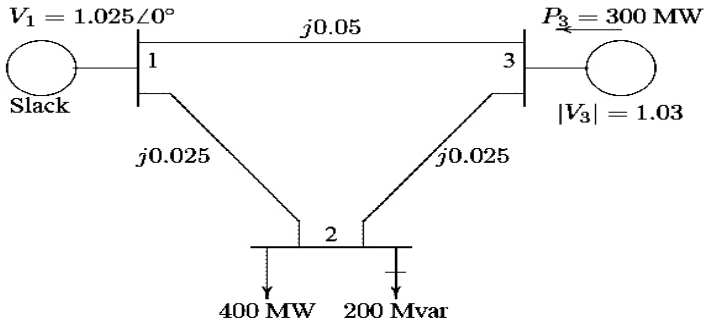


Fig. 1

4. a) Compare the Gauss-Seidel and Newton-Raphson Load flow methods.
b) For a given 12 bus system, write the Jacobian matrix of Newton-Raphson method of Load flow solution.

Bus Numbers	Type of Bus
1	Slack bus
2,3,4,5,6	PQ buses
7,8,9,10	PV buses
11,12	PQ buses

5. a) A two-pole 50 Hz 11 KV turbo alternator has a rating of 100 MW, power factor 0.85 lagging. The rotor has a moment of inertia of a 10,000 Kgm^2. Calculate H and M.
b) Explain why transient stability limit is lower than steady state stability limit.

6. a) Draw the generator equivalent circuit for sub transient and transient periods.
b) Derive an expression for the fault current for the 3 **ø** fault.

7. Define the expression for steady state stability limit using ABCD parameters.

8. Consider a Single machine connected to Infinite bus through Double circuited line. Derive the expression for critical clearing time and critical clearing angle when there is sudden short circuit on one of parallel lines.

CODE No.:10BT70204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

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 the need of inter connected Transmission System.
b) Explain the concept of power facts in AC Transmission System.

2. a) What are the basic types of FACTS controllers and give a brief description about them?
b) Give the relative importance of controllable parameters of a transmission system.
c) What are the possible benefits from FACTS technology?

3. Explain the 12-pulse voltage source converter operation.

4. a) Discuss how to improve the transient stability by using shunt compensation.
b) Explain midpoint voltage regulation with static shunt compensation.

5. Explain briefly about hybrid VAR generators.

6. Compare the dynamic performance of STATCOM and SVC from the
i) Transient stability.
ii) Response time.
iii) Exchange of real power point of view.

7. Describe the capabilities of series compensation to improve trans & stability and power oscillation damping.

8. a) Explain the basic operating control scheme of TCSC.
b) Explain SCR controlled series capacitor with neat diagram.

CODE No.:10BT70301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations November - 2014

MANUFACTURING SYSTEMS DESIGN

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. How Physical models are different from Mathematical models? Explain in detail.

2. What are the requirements of Manufacturing Automation? Explain how modeling of Manufacturing Automation is done.

3. Briefly explain the following performance measures.
a) Throughput
b) Capacity
c) Flexibility

4. What are the various methods of assembly systems used in industries? Explain.

5. What are the objectives of cellular manufacturing? Explain the concept of Composite part with an example.

6. a) What are the functions of material handling system?
b) What are the different FMS layout configurations? Explain with neat sketches.

7. Explain in detail about stochastic techniques and statistical methods.

8. Discuss the signification of simulation in manufacturing system.

CODE No.:10BT70302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations November - 2014

INDUSTRIAL AUTOMATION AND ROBOTICS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain different levels of automation and control in manufacturing.
b) Differentiate among fixed, programmable and flexible automation.

2. a) What is an automated flow line? Explain the objectives and types of automated flow lines.
b) Briefly explain automated flow line with buffer storage.

3. a) Explain various line balancing methods.
b) Describe the following:
i) Balance delay ii) cycle time iii)station time and iv) Line efficiency

4. a) Describe the classification of robots by control system.
b) Write notes on mechanical grippers.

5. a) With a block diagram, explain forward and reverse kinematics of a robot.
b) If $P = [4\ 5\ 6]^T$ is the point in fixed frame, find its coordinates in rotated frame, which is obtained by rotation of 30° about Y-axis.

6. a) Explain 4-3-4 trajectory.
b) What is point to point and continuous trajectory?

7. a) Write short notes on potentiometers and resolver.
b) Discuss in detail about velocity sensors and their uses.

8. a) How robots are applied in assembly operations? Explain in detail.
b) How robots are helpful in spray coating?

CODE No.:10BT70303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations November - 2014

FINITE ELEMENT METHODS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is FEM? Explain the principal of minimum potential energy.
b) If displacement field is described by : u = $\mathbf{(-2x+3y^2+xy)\ 10^{-4}}$ and v =$\mathbf{(x^2 + 5y - y^2)10^{-4}}$
Determine ϵ_x, ϵ_y, σ_{xy} at the point x = 2, y = 1.

2. The plate as shown in Fig. 1 has a uniform thickness t = 25 mm, Young's modulus E=200 GPa and weight density ρ =7850 Kg/m^3. In addition to its self weight the plate is subjected to a point load P= 1200N at its midpoint. Determine the following:
i) Global stiffness matrix. ii) Nodal displacements.
iii) Stress in each element. iv) Reaction force at the support.

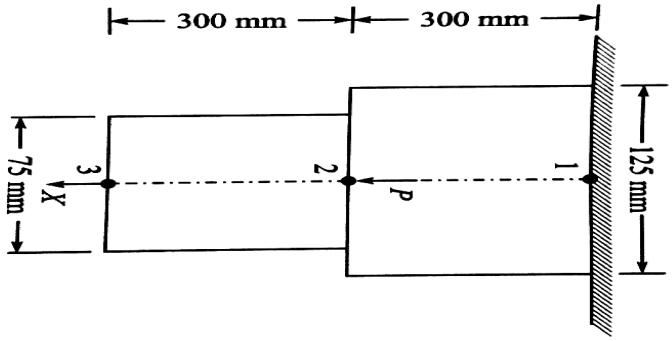


Fig. 1

3. For the beam and loading shown in the Fig.2. Determine the slopes at nodes 2, 3 and vertical deflection at the mod point of the distributed load. E = 200GPa and I=$\mathbf{4\times10^6\ mm^4}$

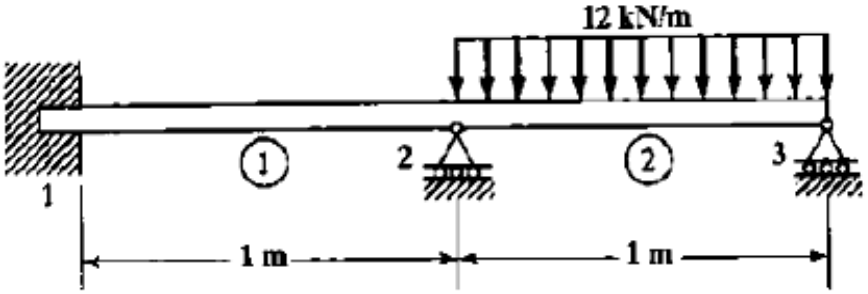


Fig. 2

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.

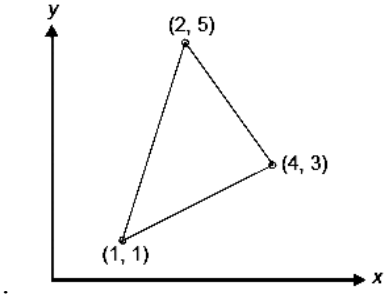


Fig 3

5. Derive the stiffness matrix for a rectangular plane stress element.

6. A circular fin of 40mm diameter is fixed to a base maintained at 500 C as shown in Fig. 4. The fin is insulated on the surface except the end face which is exposed to air at 250 C. The length of the pin is 1000 mm, fin is made of metal with thermal conductivity of 37 W/m K. If the convection heat coefficient with air is 15W/m^2 K. Find the temperature distribution at 250, 500, 750 and 1000 mm from base.

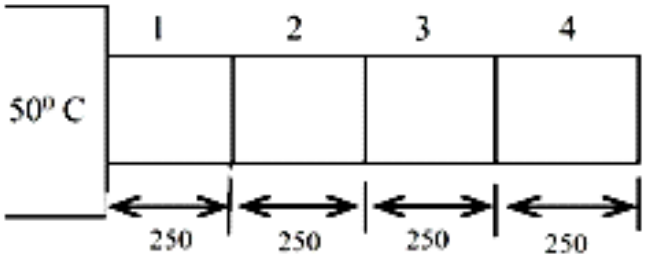


Fig. 4

7. For the one-dimensional fluid-flow problem shown in Fig. 5 with velocity known at the right end, Determine the velocities and the volumetric flow rates at nodes1 and 2. Let K_{xx}=2cm/s.

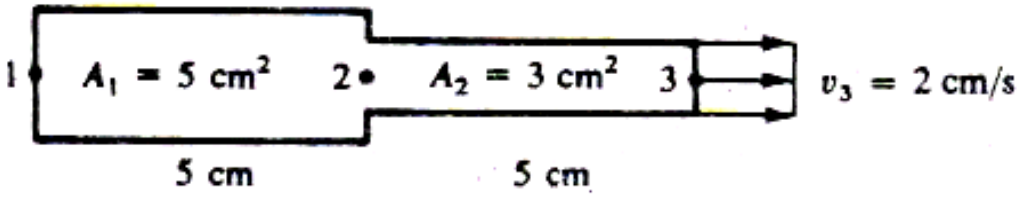


Fig. 5

8. Determine the Eigen values and Eigen vectors for the stepped bar shown in the Fig.6. Take E = 200GPa, **ρ** = 7840kg/m^3

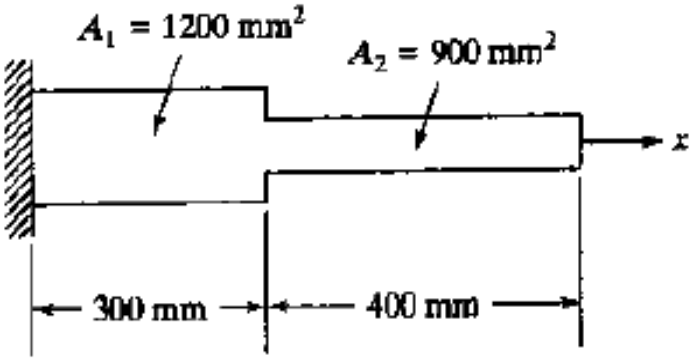


Fig. 6

CODE No.:10BT70304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations November - 2014

PRODUCTION AND OPERATIONS MANAGEMENT

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the scope and objectives of production and operations management.
b) Describe the factors which will affect the productivity.

2. a) Explain what is meant by demand noise, pattern and stability in Time-series Analysis.
b) Consider the following demand data. Compute a forecast using moving average. Obtain a one period ahead forecast. Compute also the MAD and Tracking signal. Use 3-period moving average.

Period	1	2	3	4	5	6	7	8	9
Demand	100	103	110	118	119	125	130	135	140

3. a) Define aggregate planning.
b) Given the following costs and quarterly sales forecasts, design a aggregate production plan for the company using the transportation model. Calculate the cost of the plan.

Quarter	Sales forecast
1	50000
2	150000
3	200000
4	52000

Inventory carrying cost : Rs 3.00 per unit per quarter
Production per employee : 1000 unit per quarter
Regular workforce : 50 workers
Overtime capacity : 50000 units
Subcontracting capacity : 40000 units
Cost of regular production : Rs 50 per units
Cost of overtime production : Rs.75 per units
Cost of subcontracting : Rs.100 per units

4. a) Distinguish between MRP and JIT philosophies.
b) Describe the MRP process including netting, exposing and time phasing.
c) What are the assumptions of MRP and how are they being relaxed with new technology?

5. a) State the Johnson's rule and give the assumptions made. Also, state the necessary conditions for converting “n-jobs 3-machines” problem into “n-jobs 2-machines” problem.
b) Find the sequence, for the following eight jobs, that will minimize the total elapsed time for the completion of all the jobs. Each job is to be processed in the same order CAB. Entries give the time in hours on the machines. Also determine the idle time for each machine.

Jobs		1	2	3	4	5	6	7	8
Times on machines	A	4	6	7	4	5	3	6	2
	B	8	10	7	8	11	8	9	13
	C	5	6	2	3	4	9	15	11

6. What is periodic review system? Explain its operation with suitable diagram.

7. a) Explain various aspects for building supply chain.
b) Compare between multi-sourcing and single sourcing.

8. a) Why does JIT manufacturing requires changes in manufacture architecture?
b) Write short notes on:
i) KANBAN system.
ii) Preventive maintenance.

CODE No.:10BT70305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations November - 2014

REFRIGIRATION AND AIR CONDITIONING

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List the major field of applications of the refrigerating systems.
b) The capacity of a refrigerator is 600 tons when working between -5°C and 20°C. Find the weight of the ice produced within 24 hours when water is supplied at 10°C. Also find the minimum H.P. required. Assume the cycle of operation is Carnot cycle and latent heat of ice = 80 kcal/kg.

2. a) Explain the effect of sub cooling liquid refrigerant and super heating of suction vapour refrigerant on the performance of vapour compression cycle.
b) An Ammonia refrigerator produces 30 tons of ice from and at 0°C in 24 hours. The temperature range of the compressor is from -15°C to 25°C. The vapor is dry saturated and the liquid refrigerant is sub cooled by 5°C. Assume actual COP to be 60% that of theoretical COP. Calculate the power required to drive the compressor. Latent heat of ice is 335kJ/kg.

3. a) Explain the difference between air cooled and water cooled condensers and also explain the working of cooling tower.
b) Explain the Nomenclature of refrigerants and write the chemical formula of the following Refrigerant numbers.
i) R-134a ii) R-22 iii) R-502

4. a) With the help of line diagram, explain the working of a Lithium Bromide Water Vapour Absorption Refrigeration System giving salient points.
b) With the help of the principle and line diagram, explain the three fluid absorption system working along with the advantages and limitations.

5. a) Explain the working details with the help of line diagram the Hilsch tube.
b) Estimate the motive steam required in steam jet refrigeration system.

6. a) What is ADP of cooling coil? How is the by pass factor of cooling coil related to ADP?
b) A space with room sensible heat load of 60,000 kJ/hr is desired to maintained at 25.5 °C dB and 18.5°C WB when outdoor conditions are 35 °C dB and 23.55°C WB. Ventilation air quantity is estimated to be 56.5 m^3/min. Assume a coil by pass factor of 0.15.

Estimate :
i) The effective room sensible heat load.
ii) The effective SHF.
iii) Apparatus Dew Point temperature (ADP).
iv) m^3/min of air quantity required for the space load.

7. a) Explain the various loads that you take into account for summer air conditioning of a room.
b) Explain the working of an air conditioning system that you recommend for your college principal's room for winter season.

8. The following data were collected in connection with the design of air- conditioning of small theatre.

Total seating capacity 350 persons.
Atmospheric condition 34°C DBT and 70% RH.
Comfort condition required 22°C DBT,50% RH.
Sensible heat given per person =320 kJ/hr.
Latent heat given per person -100 kJ/hr.
Sensible heat due to solar heat and infiltrated air =16,00,000 kJ/hr.
Latent heat due to infiltrated air = 80,000 kJ/hr.
Quality of fresh air supplied = 0.4 m^3/person/min.
Desirable temperature rise in theatre 8°C.

Assume the re circulated air is mixed with the fresh air after leaving the conditioner and also the air leaves the conditioner coil with 100% RH.

Compute: i) Percentage of total air re circulated
ii) Refrigeration capacity of conditioner coil.

CODE No.:10BT70311

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations November - 2014

MECHATRONICS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the basic forms of control systems? Explain their difference briefly with an example?
b) What are the advantages of microprocessor based controllers over mechanical cam operated controllers?

2. a) Classify and discuss the signals from various points of view.
b) Why is frequency domain representation of signal important? Explain.

3. a) What are the advantages of the antifriction bearings? Explain different types of ball and roller bearings with their applications.
b) Why ball screws are used in mechatronics systems? With a neat sketch explain its working.

4. a) What is the role of circuit breakers in electronic interfacing? Explain with suitable example.
b) What is TTL? Explain, how it will comes to logic family? Show with suitable diagram.

5. a) Explain the working of brushless DC motor with neat diagram.
b) Write a note on pulse width modulation.

6. a) How does a Microcontroller differ from a Microprocessor?
b) Draw a block diagram of a basic Microcontroller and explain the functions of each system.

7. a) What are the different types of data handling systems used in PLC? Explain.
b) What is the basic structure of PLC? Explain.

8. Write short notes on the following:
a) RTS b) Bimetallic strips c) Strain gage loaded

CODE No.:10BT70401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) A particular ammeter requires a change of 2A in its coil to produce a change in deflection of the pointer by 5mm. Determine its sensitivity and deflection factor.
b) Explain the features of a DC Voltmeter and list its applications.

2. a) Explain the method of producing sine waves in a function generator. How it differs with a square wave generator?
b) Explain the requirements of a pulse in a square and pulse generator.

3. a) With the help of a block diagram explain an AF wave analyzer.
b) State the applications of wave analyzer.

4. a) Explain the functions of various controls on the front panel of a CRO.
b) What are the advantages of using active probe?

5. a) With a neat block diagram explain the operation of digital storage oscilloscope.
b) List the features of Storage oscilloscope.

6. a) Draw the circuit diagram and obtain the balance condition of an Anderson bridge.
b) Compare AC and DC Bridges in brief.

7. a) How do you classify strain gauges and explain in detail.
b) Describe with the help of a diagram the construction of an LVDT.

8. a) Explain in detail about single channel DAS.
b) Discuss in detail instruments used in computer controlled instrumentation.

CODE No.:10BT70402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

DIGITAL IMAGE PROCESSING

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about the basic relationships and distance measures between pixels in a digital image.
b) Write short notes on the 'Arithmetic Operations' used in the Digital Image Processing.

2. a) Explain and list the properties of Slant transform.
b) Explain and list the properties of Haar transform.

3. a) What is meant by image enhancement? Explain about the
i) Gray level slicing ii) Bit plane slicing
b) State and explain any two smoothing linear filters.

4. a) Explain the method of image Sharpening in frequency domain.
b) Explain the method of image Smoothing in frequency domain.

5. a) Explain how to denoise the image corrupted with salt and pepper noise using Median filter.
b) Discuss about the additive and Multiplicative noise models.

6. a) Discuss the importance of thresholding in image segmentation.
b) Write notes on region based image segmentation.

7. a) Explain the need for compression with an example.
b) Briefly explain about the image compression standards.
c) Write short note on 'Huffman Coding'.

8. a) Explain the conversion form HSI to RGB color model.
b) Discuss about smoothing and sharpening of color images.

CODE No.:10BT70405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

EMBEDDED AND REALTIME SYSTEMS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. What is the need for IDE in an Embedded Architecture? Discuss.

2. a) Explain pipelining technique. Determine the speedup of a pipelined processor over a non-pipelined processor if 4000 instructions are executed in an 8 stage pipelined processor whose clock frequency is 20 MHz.
b) Differentiate between single purpose and general purpose processors.

3. a) Describe program state machine model with relevant example.
b) Discuss about concurrent processes.

4. a) Explain the signal using a transfer of byte when using the I2C bus and also the format of bits at the I2C bus with diagram.
b) Explain the internal serial communication device.

5. a) What are the objects of an operating system kernel?
b) Write short notes on commercial RTOS capabilities.

6. a) Explain queue related functions.
b) Explain multitask and their functions in embedded system.

7. a) Explain the principles of basic embedded system design using RTOS.
b) Write notes on handheld operating systems.

8. Explain the following related to embedded system design technology.
i) System Synthesis ii) Hardware/Software Co-Simulation

CODE No.:10BT70408

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

RADAR SYSTEMS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the losses in Radar system and how do you compensate them?
b) Derive the Radar range equation.

2. a) Explain the terms :
i) PRF ii) S/N ratio iii) Radar Cross Section iv) False Alarm
b) Discuss how integration of pulses will improve the performance of Radar.

3. What are the advantages of FMCW Radar? Explain the principle of FMCW Radar and also derive expression for radar range.

4. a) Describe the operations of MTI radar with the help of a block diagram.
b) Explain the importance of staggered PRF.

5. a) Compare various types tracking techniques.
b) Explain in detail the operation of a phase comparison tracking Radar.

6. a) Write the characteristics of matched filter and derive the frequency response.
b) Derive the equation for matched filter receiver and explain the importance of different subsystems involved in it.

7. a) Discuss about image -rejection mixer used in Radar receiver.
b) With necessary block diagram, explain the operation of balanced duplexer.

8. a) What is the role of SAR as the only practical solution for radar remote?
b) Explain about Inverse SAR.

CODE No.:10BT70421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

ADVANCED MICROPROCESSOR AND MICRO CONTROLLERS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw and discuss the register organization of 80286.
b) What are the different interrupts available in 80286?

2. a) Draw the block diagram of the 80386 processor and explain each block in brief.
b) Give detail on the interrupt structure and memory access structure of 80386.

3. a) Explain the architectural enhancements of Pentium Pro processor.
b) Explain the Paging unit and memory management mode of Pentium processor.

4. Explain the pin description of Pentium IV microprocessor with a neat pin diagram.

5. a) What is program memory and explain purpose of program memory in microcontrollers.
b) What is watch dog timer and how will you set the watch dog timer to restart the processor at every 2ms ?

6. a) Explain the 8051 logic instructions for bit-manipulation.
b) Discuss the interrupt control flow of 8051.

7. a) Explain Multiple Sources of Interrupts.
b) Explain Interrupt structure in Intel 8051 microcontroller.

8. a) Explain the architecture block diagram of 80196.
b) Explain the difference between exception handling and Interrupt handling in ARM.

CODE No.:10BT70501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

PRINCIPLES OF COMPILER DESIGN

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is the role of the lexical analyzer? Explain.
b) Identify the token and lexemes in the following function:

```
int gcd (int m, int n)
{
 if n == 0 then   return (m);
 else   return (gcd (n, m mod n));
}
```

2. Consider the following grammar for Boolean expressions.

E → E or E
E → E and E
E → not E
E → (E)
E → true
E → false
E → id

i) Show that this grammar is ambiguous.
ii) Rewrite the grammar to remove the ambiguity and enforce the intended precedence order by introducing new non terminals. Make sure that your revised grammar accepts the same language as the original.

3. a) Explain the format and actions of a Shift- Reduce parse table.
b) Construct SLR Parse table for the following grammar.

E → E+T | T
T → T*F| F
F → (E)| id

4. a) Distinguish between a parse tree and a syntax tree.
b) Write SDT to generate three address code for arithmetic statements.

5. a) What is type Checker? How does it work?
b) Write short notes on Dynamic and Static type checking.

6. a) Explain about Runtime storage administration.
b) Write about different data structures suitable for Symbol Table.

7. Explain about the principle sources of code optimization.

8. a) Discuss the principle sources of code optimization.
b) Discuss on activation records in storage organization.

CODE No.:10BT70502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

SOFTWARE TESTING TECHNIQUES

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Give differences between functional testing and structural testing.
b) Explain about the importance of bugs and their consequences.

2. Explain path sensitizing with an example in detail.

3. a) Discuss about the complications in transaction flow.
b) Discuss about Slicing, Dicing, Dataflow and debugging.

4. Discuss in detail about domain testing with examples in detail.

5. a) Explain about mean processing time of a routine with an example.
b) Explain about the limitations and solutions of applications.

6. a) Discuss about decision table and structures.
b) What are the rules of Boolean algebra?

7. a) Explain about software implementation issues in state graphs.
b) Explain about unreachable states and dead states.

8. a) Discuss about node reduction algorithm with a suitable example.
b) Give reasons, why 2-dimensional array representation is not convenient for larger graphs.

CODE No.:10BT70506

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

EMBEDDED SYSTEMS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain about major steps in the embedded system design process.

2. Explain the complete architecture of 8051 with neat sketch.

3. a) Explain the addressing modes of 8051 with examples.
b) Explain different MOV instructions with examples.

4. a) Write short notes on flags in 8051
b) Write an assembly language program to exchange the lower nibbles of two registers R**1** and R**5**.

5. Explain about Intelligent LCD Display interfacing with 8051.

6. a) Define semaphore. Explain the use of semaphore with examples.
b) Explain the memory management operations related to real time operating systems.

7. a) What are the functions of linker and locator?
b) Give the steps to get embedded software into the target system.

8. Explain about Internet Enabled Systems with an example.

CODE No.:10BT71001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

ANALYTICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the block diagram of digital pH meter and explain.
b) Explain the dissolved hydrogen measurement by using Katharometer principle.

2. a) What is the principle of NO_x analyzer? Explain its working.
b) Explain about different types of thermal conductivity gas analyzers.

3. a) Explain the working principle of Electron Capture Detector.
b) Explain the working principle of Fluorescence Detector.

4. a) Draw the sketch of a double beam IR spectrophotometer.
b) Explain and Derive equation for Beer-Lambert's Law.

5. a) Discuss the calibration method adopted for IR spectrometer.
b) Explain about the advantages and disadvantages associated with single and double beam spectrometer.

6. a) Explain the working of a typical FTIR spectrophotometer.
b) Discuss the functionality of flame photometers.

7. a) Explain the working principle of Electron Spin Resonance Spectrometers.
b) With a neat diagram explain the X-ray Diffract meters.

8. Explain the constructional details and operation principle of;
i) G.M.Counter ii) Gamma detector

CODE No.:10BT71002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

AUTOMATION OF INDUSTRIAL PROCESSES

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Differentiate Batch Process and Continuous Process.
b) Explain the significance of man machine interface.

2. a) Explain fieldbus.
b) Explain the various communication modes of HART.

3. What is tuning of a controller? Explain the Ziegler Nichol's Method of tuning.

4. State and derive the Dead Beat Algorithm.

5. a) Explain the differences between feedback and feed forward control systems.
b) Explain the feed forward control system with an example.

6. Explain when a cascade control is recommended? Give the dynamic response of cascade control system.

7. With necessary diagram, explain the architecture of the PLC.

8. Explain about the hierarchy in DCS system. Describe any one commercial DCS.

CODE No.:10BT71005

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

MEMS AND MICROSYSTEMS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With the help of a generalized block diagram, explain the components of Microsystems.
b) Give at least four distinct advantages of miniaturization of machines and devices.

2. a) Why are electrostatic forces used to run micromotors rather than conventional electromagnetic forces? Explain why this actuation technique is not used in macrodevices and machines.
b) What are the advantages and disadvantages of piezoresistors and capacitors as signal transducers?

3. a) Explain about bending of circular plates with edge fixed.
b) Determine the amplitude and frequency of vibration of a 10-mg mass suspended from a spring with a spring constant $k = 6 \times 10^{-5}$ N/m. The vibration of the mass is initiated by a small "pull" of the mass downloaded by an amount $\delta_{st} = 5\mu m$.

4. a) What is importance of SCALING in MEMS? What are the two types of SCALING LAWS applicable in the design of Microsystems?
b) Explain about scaling in Electricity in detail.

5. a) Why Silicon is ideal substrate for MEMS?
b) What is Polymer? Why polymer is extensively used in MEMS?

6. Discuss in detail the steps involved in the following Microsystem fabrication processes
i) Ion implantation
ii) Diffusion

7. a) Differentiate between bulk micromachining and surface micromachining.
b) Explain the key steps in manufacturing a pressure sensor using bulk micro machining.

8. Describe any three essential packaging technologies of MEMS and Microsystems.

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

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) What is a frame? Write a HTML program to create a single screen with four frames having two horizontal and two vertical.
b) What is a style sheet? What are the benefits of using styles compared with inline formatting directly into the text of a web page?

2. a) Outline the structure of a javascript program. Also explain how a javascript can be included in HTML documents.
b) List out the objects and events in javascript.

3. How is XML different from HTML? Elucidate with an example.

4. Explain Servlet Life Cycle and how do you differentiate from applets?

5. a) Discuss about prepared statements.
b) Write a note on java.sql.Driver class.

6. a) Explain MVC architecture with a neat diagram.
b) Discuss JSP directive elements.

7. a) What are the different ways of inserting a bean property value in a JSP page?
b) What are JSP tag extensions?

8. Construct a JSP page with JSPTL integration and mention its advantages.

CODE No.:10BT71202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

MOBILE COMPUTING

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the following:
a) GSM services and security b) Localization and calling in GSM

2. a) Define hidden and exposed terminal problems and suggest a solution for it.
b) Compare FDMA, TDMA and CDMA.

3. a) Explain the following terms of Bluetooth:
i) Networking ii) Security
b) Explain the MAC sub-layer of HIPERLAN.

4. a) Explain Tunneling and Encapsulation.
b) Assume that a high-speed data transfer segment of 10,004,020 B has the sequence number from 1025 - 100,005,044. Assume that the window-size field specified by the other end as 10,000 B. Since, the transmitter supports high-speed data transfer, the window is scaled up by a shifting number of 8. How is the window scaled? How does the TCP_A transmit?

5. a) Explain Power-aware and Context-aware Computing.
b) Define the terms
i) Hoarding Techniques ii) Client -Server Computing

6. Explain in detail about pull based mechanisms.

7. Explain routing and security threats in MANET's and why security is an important issue in MANET.

8. a) Draw the Components and Interface of WAP 1.x architecture and explain protocol architecture.
b) Give real time applications about any two wireless telephony applications.

CODE No.:10BT71203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

MULTIMEDIA AND APPLICATIONS DEVELOPMENT

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain briefly HTTP, HTML, XML.
b) Discuss the various multimedia software tools.

2. a) Explain about Sound and Digitization.
b) Explain various types of Video Signals.

3. Illustrate different types of constructor functions in Action Script 2.0.

4. a) What is a package? Write an Action Script program for creating a package.
b) Explain Exception handling cycle.

5. Explain about Components with Action Script 2.0.

6. Distinguish between lossless and lossy compression techniques.

7. a) What is predictive coding?
b) Discuss the main steps in JPEG 2000 compression.

8. Discuss the following protocols:
a) RSVP b) RTSP

CODE No.:10BT71204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

CRYPTOGRAPHY AND NETWORK SECURITY

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain active and passive network security threats.
b) What is a Caesar cipher? Discuss the characteristics of it that help the cryptanalyst using Brute-force attack.

2. a) Discuss the operation of 3 key triple DES.
b) Explain message authentication using one-way hash function.

3. a) Explain Kerberos and X.509.
b) Construct RSA algorithm and find the value of cipher text for any plain text.

4. a) Explain the authentication and confidentiality services of PGP.
b) What are the functions of S/MIME?

5. a) Explain IP Security scenario along with benefits.
b) Explain OAKLEY key determination protocol.

6. a) What services SSL record protocol provides for SSL connections? How are they provided? Explain.
b) Describe the differences between SSL and TLS.

7. a) Explain about Statistical Anomaly Detection.
b) Explain about DDOS Attacks.

8. a) What are the main actions of a packet filter? Discuss.
b) Explain the concept of Trusted Systems.

CODE No.:10BT71208

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

SOFTWARE PROJECT MANAGEMENT

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) How the expenditure of a conventional software project distributed across various activities? Explain with an example.
b) "A serious issue associated with the waterfall life cycle was the lack of early risk resolution" Do you agree this? Justify.

2. a) What are the ways of achieving better economics in software?
b) Discuss the inherent risk resolution features in the modern process.

3. a) Explain Inception phase and Elaboration phase of life-cycle process.
b) Describe the following artifact sets.
i) Requirements Set ii) Design Set

4. Explain an organized and abstracted view of the architecture into the design models.

5. a) Why periodic assessments are crucial for focusing continuous attention on the evolving health of the project and its dynamic priorities? Explain.
b) What is an evolutionary Work Breakdown Structure? Explain.

6. a) Define stakeholder. Who are stakeholders? Explain.
b) Briefly explain Configuration baseline.

7. a) What is Software Change Order? Explain with an example.
b) Define Process Maturity level of a development organization. How does it affect the product life-cycle?

8. a) Which are the sources of architectural risks? Summarize the key differences in the process primitives for varying level of architectural risk.
b) What are the differences in workflow priorities between small and large projects? Explain.

CODE No.:10BT71222

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

SOFTWARE ARCHITECTURE

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Distinguish between organization and architecture. Under what influences architectures are built. Which influence is most significant and why?

2. a) Discuss about a software paradigm for process control.
b) Explain about Heterogeneous architecture.

3. a) Explain evolution of Shared Information Systems in Software Development Environments.
b) What is Batch Sequential? Explain transition from Batch Sequential to Repository.

4. Define User Interface. Write the techniques used for defining appearance and behaviour of User Interface.

5. a) Explain Structural Patterns.
b) Explain dynamic behaviour of MVC with any one scenario.

6. Write short notes on :
i) Architectural Styles ii) Architectural Design Space

7. Explain architectural information is captured from an ADL.

8. Explain in your own perspective the following :
i) Creating Products and Evaluating a Product Line.
ii) Component Based Systems.

CODE No.:10BT71301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

NEURAL NETWORKS AND FUZZY SYSTEMS

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is the signification of activation function in learning of artificial neural networks and discuss different types of activation functions?
b) Compare and contrast Supervised and Unsupervised learning.

2. a) State and prove Perceptron convergence theorem.
b) What are the limitations of single layer perceptrons?

3. a) Explain the Hopfield network algorithm.
b) Explain about full CPNN.

4. Explain :
i) BAM Training Algorithm.
ii) Basic Architecture of BAM Energy Function.

5. a) Define Membership function.
b) Explain Basic Fuzzy set operations.

6. a) Define Defuzzification. Explain different methods of Defuzzification.
b) Explain the properties of membership function and membership value assignment.

7. Explain the various stages of fuzzy logic controller.

8. a) Explain forward process identification using artificial neural networks.
b) Explain how to validate a trained neural network in short term load forecasting.

CODE No.:10BT71302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

PROGRAMMABLE LOGIC CONTROLLERS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write the output modules of PLC.
b) What are the advantages and disadvantages of PLC?

2. a) Discuss the importance of Fail-Safe Circuits.
b) What are the input instructions and also explain the outputs in PLC Programming?

3. a) Explain the following
i) NAND gate and relay and plc equivalence
ii) NOT gate and relay and plc equivalence
b) Draw a schematic of a ladder diagram for the following sequence
i) when sw**1** is closed cr**1** goes on
ii) after cr**1** goes on, sw**2** can turn cr**2** on
iii) when cr**2** goes on, pl**1** goes off (use nine step planning sequence)

4. a) Explain in brief about holding, input and output registers.
b) Explain the timer functions and industrial applications.

5. Explain about the PLC basic and advanced comparison functions with suitable examples.

6. Explain in details about PLC MOVE functions.

7. a) What is the significance of a cascaded sequence in PLC programming? Explain.
b) Explain operation of industrial three axis robot control.

8. a) Write about PLC auxiliary commands and functions.
b) Write about networking of PLC.

CODE No.:10BT71501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

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) List and Explain Buffer Sizes and their Limitations.
b) Summarize the usage of protocols for various common Internet Applications.

2. a) Give a note on byte ordering functions.
b) Discuss elementary socket functions in detail.

3. Explain TCP echo server functions.

4. a) Write about socket states.
b) Explain 'shutdown' and 'poll' functions.

5. a) Explain elementary UDP sockets.
b) Write the similarities between TCP socket, UDP socket and raw socket.

6. a) Explain 'gethost by name' function.
b) Explain 'resolver' option in detail.

7. Explain the concept of IPC using pipes.

8. Write notes on the following:
a) Pseudo-Terminals b) Rlogin

CODE No.:10BT71502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

SOFT COMPUTING TECHNIQUES

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain about the important Architectures of neural network.

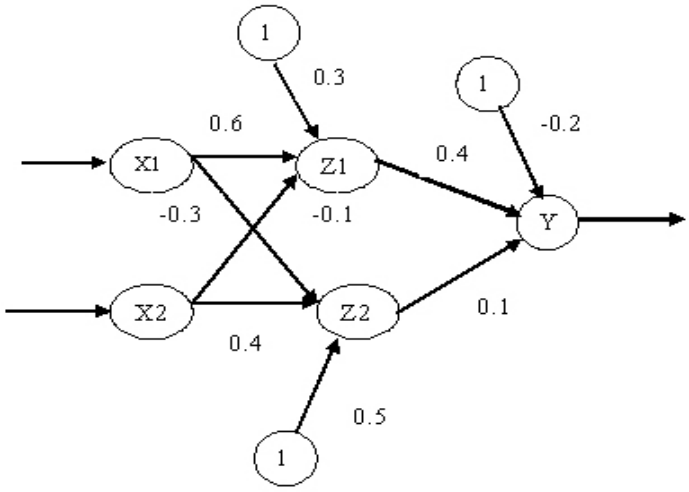
2. a) Write notes on ART network and the role of vigilance parameter in ART.
b) Compare the properties of crisp set with fuzzy set.

3. a) Explain the limitation of back propagation learning .Describe the Boltzmann Machine.
b) Explain single layer feed forward neural network model.

4. a) Explain the applications of Adaptive Resonance Theory.
b) Explain the applications of Associative Memory.

5. Define Crisp sets with its fundamental concepts.

6. Find the new weights using back propagation for the given network. The network is presented with the input pattern [-1, 1] and the target output 1. Use learning rate $\alpha = 0.25$ and use bipolar sigmoidal activation function.



7. Explain Fitness function.

8. Write a note on Inversion and Deletion.

CODE No.:10BT71503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

ARTIFICIAL INTELLIGENCE

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail on the characteristics and applications of learning agents.
b) List the characteristics of intelligent agent and explain in detail.

2. a) Explain the use of planning graphs in providing better heuristic estimates with suitable examples.
b) Write Graph Search algorithm and interpret it with an example.

3. a) What is the significance of knowledge representation? Compare and contrast database and knowledge base.
b) Explain about WUMPUS world.

4. Given the following English statements
A1: Everyone who loves all animals is loved by someone
A2: Anyone who kills an animal is loved by no one?
A3: Jack loves all animals
A4: Either Jack or curiosity killed the cat, who is named Tuna?

Write First Order Logic for A1 through A4. Give answer to the question "Did curiosity kill the cat?" from the above English sentences by making use of Resolution Algorithm.

5. a) Explain Mental Events and Mental Objects.
b) Explain Semantic Networks in detail with an example.

6. What are the purposes of Bayes theorem? Give the mathematical expression of Bayes theorem.

7. a) Explain the concept of learning with example.
b) Explain the concept of learning using decision trees and neural network approach.

8. a) Describe how Neural networks are viewed as Directed Graphs.
b) Describe in detail about Fuzzy Hedges and Cut Threshold.

CODE No.:10BT72301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

COMPUTATIONAL MOLECULAR BIOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Write detailed account on functional genomics.

2. Write notes on gene identification *in silico*.

3. Write notes on gene expression profiling with DNA microarrays.

4. Discuss about the different computational methods for comparison of the protein structures.

5. Discuss about protein design emphasis on structural bioinformatics.

6. Describe character based method for phylogenetic tree construction.

7. Define dendrogram. Write about interpretation of dendrogram and considerations in cluster analysis.

8. Write notes on structure based drug design and different types how it is contributing to pharmaceutical companies.

CODE No.:10BT72302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

BIOETHICS, BIO SAFETY AND INTELLECTUAL PROPERTY RIGHTS

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Describe Bioethics? Explain the social and ethical issues involved in Biotechnology.

2. Write short notes on:
i) Stem cells ii) Applications of cloning

3. Explain the concept of biosafety and different biosafety levels.

4. Explain Biosfaety guidelines in India.

5. What is a patent? What are the laws and objectives of the patent system?

6. Write short notes on:
i) PPVFR ii) Trade Marks

7. Name some international conventions on Biotechnology and explain.

8. Write short notes on protection for plant varieties and farmers rights and legal implications.

CODE No.:10BT72303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

DOWNSTREAM PROCESSING

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain in detail the cost-cutting strategies in bioprocess industries.

2. Give an account of the mechanical and non-mechanical methods of cell disruption.

3. a) Explain the different factors used in precipitation.
b) Explain the principle and working of ultracentrifuge.

4. a) What is ultra filtration? Explain the theory of ultra filtration.
b) How ultra filtration is useful in bio separations?

5. Discuss the theoretical principles and practice of salting out of proteins by ammonium sulphate.

6. a) Explain the principle and methodology of isoelectric focus with a suitable diagram.
b) Write a detailed note on SDS-PAGE electrophoresis.

7. Write about the different operating methods of HPLC and give suitable examples.

8. a) A biotech company used *Penicillium notatum* to produce certain isoform of penicillin in a submerged bioreactor. Consider that you are an expert in downstream processing working in that company. Explain the different steps you will follow to purify the product in a cost effective manner.
b) Write short notes on the principle of pervaporation.

CODE No.:10BT72304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

NANOBIOTECHNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the interactions between Biomolecules and Nanoparticles surface in detail.

2. Write notes on:
i) Protein based nanocircuitry.
ii) DNA Nanostructures.

3. Write a short notes on :
i) Information storage and molecular switching.
ii) Wells, dots and wires.

4. What is e-beam Lithography and explain with suitable examples.

5. Explain the following:
i) Significance of Nanoscale Lithography.
ii) Mechanism of Molecular synthesis of Nanostructures.

6. Explain how bacteria, fungi and actinomycetes are useful for synthesis of nano particles in detail.

7. Explain the role of plants in nanoparticles synthesis and write their applications.

8. Write a short notes on :
i) Drugs-photodynamic therapy.
ii) Molecular motors.

CODE No.:10BT72308

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

CANCER BIOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Give an overview of mutations that cause change in signal molecules.
b) Discuss various phases of cell cycle with molecular events associated with different phases.

2. Discuss the important characteristics of malignant tumors.

3. Give an overview of chemical carcinogens with their role in cancer development.

4. Discuss the principle of physical carcinogenesis. Explain the mechanism involved in the radiation induced carcinogenesis with suitable examples.

5. What are the available detection methods for Oncogenes?

6. Explain about
a) Angiogenesis b) Metastatic cascade

7. Describe about various prediction methods for aggressiveness of cancer.

8. What is biotherapy? Explain biotherapy in reference to cancer treatment.

CODE No.:10BT72310

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

BIOPHARMACEUTICAL TECHNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the intramuscular and intravenous routes of drug administration.
b) Explain with examples about the chemical synthesis of drugs.

2. What is the significance of bioavailability? Explain the pharmacokinetic methods for bioavailability determination.

3. Write in detail about drug receptors?

4. Explain the current Good Manufacturing Practices with respect to the production of liquid orals.

5. Explain the production of solid dosage forms.

6. Explain the production of Cytokines and Tumor Necrosis factor.

7. What are the advantages and limitations of liposome mediated drug delivery? Explain any one method for preparation of liposomes.

8. Discuss the role of biopharmaceuticals in treatment of health disorders.

CODE No.:10BT80504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2014

CLOUD COMPUTING

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the pros and cons of Cloud Computing. Also, highlight the characteristics of a Cloud.
b) Explain briefly the various benefits that can be derived from Cloud Computing.

2. a) Discuss the evolution of Cloud Computing in detail.
b) Explain about the on-demand computing with an example.

3. Discuss the features of VMware and Microsoft Hyper-V.

4. Write short notes on :
i) Data security.
ii) Host security.

5. What is the need for security in cloud computing? Explain with a case study.

6. Explain about disaster and capacity planning in Cloud Computing.

7. a) Write about the Cloud scale.
b) Explain the relationship of graphs with Cloud Computing with a relevant example.

8. Explain the HDFS and Hadoop architecture with real time examples.

CODE No.:10MC50101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular/Supplementary Examinations January - 2015

OBJECT ORIENTED ANALYSIS AND DESIGN

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Write short on :
a) Object Identity b) Inheritance c) Polymorphism d) Information Hiding

2. Explain the following:
a) Class hierarchy b) Object relationships and associations.

3. What is schema and explain about the Logical database schema?

4. a) Differentiate between State chart and Activity diagram.
b) Draw a Sequence diagram for "Railway Ticket Reservation System"

5. Briefly explain about UML Dynamic Modeling.

6. a) Write short notes on Processes and Threads.
b) Differentiate between Deployment and Component diagram.

7. Explain about selection of a design pattern and use of design patterns.

8. Explain in detail about embellishing the user interface.

CODE No.:10MC50102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular/Supplementary Examinations January - 2015

MANAGEMENT INFORMATION SYSTEM

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain System view of Business.

2. What is meant by Organizing? Explain various Organization systems.

3. What is Decision Making? Explain about the Programmed and Non-Programmed decisions.

4. Discuss about the conceptual system design for a business system.

5. Why the term feasibility design is often used to designate conceptual design? Which term do you think is more appropriate? Why?

6. What are the four principal sources for the design of the MIS? Explain.

7. Discuss about new trends in technology for MIS.

8. Explain the general weaknesses in Firm and how they affect MIS development.

CODE No.:10MC50103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular/Supplementary Examinations January - 2015

MIDDLEWARE TECHNOLOGIES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain in detail about Reflection in **.**NET with an example.

2. Explain in detail about RMI architecture with neat diagram. Write any sample program to create an RMI object.

3. Enumerate the steps involved in creating and using a delegate.

4. a) What is object serialization? Explain with an example.
b) Write short notes on XML web services.

5. Write a C# **.**NET code which explains Object Oriented Programming concepts in C#.

6. a) Discuss on CORBA initialization protocol.
b) Explain about CORBA object model.

7. Explain in detail about CORBA with the help of a code.

8. Write a detailed note on Evolution of Computing Models.

CODE No.:10MC50106

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular/Supplementary Examinations January- 2015

SOFTWARE TESTING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Define Software Testing. Discuss dichotomies in software testing.
b) Explain various consequences of bugs in software testing.

2. Discuss about path sensitizing with an example. Give application of path testing.

3. What is a dataflow testing strategy? Give an example and distinguish the testing applications and tools.

4. Define domain testing. Explain domain and interface testing with an example.

5. Write the steps involved in node reduction procedure. Illustrate all the steps with the help of neat labeled diagrams.

6. Write detail notes about State Testing and distinguish Transaction Flow and Data Flow testing.

7. Compare linguistic and structural metric.

8. Explain in detail about Load Runner with a Client / Server application for testing.

CODE No.:10MC50108

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular/Supplementary Examinations January - 2015

CLOUD COMPUTING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is cloud computing? Explain its features.
b) Is Cloud Model Reliable? Explain its benefits and limitations.

2. What are the various Virtualization Technologies and explain any two?

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. How the Virtualization can improve the performance and capacity of the system?

5. Explain the Cloud Computing Technology with example.

6. Explain grid computing application architecture. Illustrate the process flow of a grid computing application with suitable diagram.

7. Describe the purpose of Network Intrusion Detection System (NIDS) and Host Intrusion Detection System (HIDS).

8. Explain Disaster Management in Cloud Computing.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC14) Regular Examinations February - 2015

MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Compute the truth table of the statement: $(P \wedge Q) \vee (\neg P \wedge Q) \vee (P \wedge \neg Q) \vee (\neg P \wedge \neg Q)$. 6 Marks

b) Obtain the principal conjunctive normal form of the formula S given by $(\neg P \rightarrow R) \wedge (Q \Leftrightarrow P)$. 6 Marks

(OR)

2 a) Obtain the principal disjunctive normal form of the formulas $(Q \rightarrow P) \wedge (\neg P \wedge Q)$. 6 Marks

b) i) Show that $(P \vee Q)$ follows from P. 6 Marks

ii) Symbolize the statement "All men are giants."

UNIT-II

3 a) If relations R and S are both reflexive, show that $R \cup S$ and $R \cap S$ are also reflexive. 6 Marks

b) Let $X = \{1, 2, 3, - - - -, 7\}$ and $R = \{\langle x, y \rangle \, | x - y | \ \textit{is divisible by } 3\}$ Show that R is an equivalence relation. Draw the graph of R. 6 Marks

(OR)

4 a) Let $X = \{2, 3, 6, 12, 24, 36\}$ and the relation $\leq$ be such that $x \leq y$ if x divides y. Draw the Hasse diagram of $\langle X, \leq \rangle$. 4 Marks

b) 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 $g \circ f; f \circ g; f \circ f; gog; f \circ h; h \circ g; h \circ f$ and $f \circ h \circ g$. 4 Marks

c) Let $f: R \rightarrow R$ be given by $f(x) = x^3 - 2$. Find f^{-1}. 4 Marks

UNIT-III

5 a) Given the algebraic system $\langle N, + \rangle$ and $\langle Z_4, +_4 \rangle$, where N is the set of natural numbers and + is the operation of addition on N, show that there exists a homomorphism from $\langle N, + \rangle$ to $\langle Z_4, +_4 \rangle$. 6 Marks

b) Write semi group and monoid with examples. 6 Marks

(OR)

6 a) State and prove the principle of inclusion-exclusion. 6 Marks

b) Prove the following statement is true by using Mathematical induction. 6 Marks

$$1^2 + 2^2 + 3^2 + - - - - + n^2 = \frac{n(n+1)(2n+1)}{6}$$

UNIT-IV

7. a) Find a generating function for a_r = the numbers of ways of distributing r similar balls into n numbered boxes where each box is non empty. 6 Marks

b) Find the coefficient of X^{20} in $(X^3 + X^4 + X^5 . + ...)^5$ 6 Marks

(OR)

8. Solve the following recurrence relation using the characteristic roots 12 Marks
$a_n - 4a_{n-1} - 12a_{n-2} = 0$ for $n \geq 2$ and **$a_0 = 4$, $a_1 = 16/3$.**

UNIT-V

9.	a)	Prove that a simple graph is bipartite if and only if it is possible to assign one of two different colors to each vertex of the graph so that no two adjacent vertices are assigned the same color.	8 Marks
	b)	Write the prim's Algorithm	4 Marks
		(OR)	
10.	a)	Prove that a tree with n vertices has n-1 edges.	7 Marks
	b)	Prove that an undirected graph has an even number of vertices of odd degree	5 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC14) Regular Examinations February - 2015

ACCOUNTING AND FINANCIAL MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 What is a trail balance? Briefly explain its role in the double entry book keeping? 12 Marks

(OR)

2 Describe Computerized Accounting. Explain the Features and Advantages of Computerized Accounting System? 12 Marks

UNIT-II

3 The following is the Trial Balance extracted from the books of Akash as on 30th September, 2012: 12 Marks

Particulars	Debit Rs.	Credit Rs.
Capital account	--	1,00,000
Plant and Machinery	78,000	---
Furniture	2,000	---
Purchases and sales	60,000	1,27,000
Returns	1,000	750
Opening stock	30,000	---
Discount	425	800
Sundry debtors / creditors	45,000	25,000
Salaries	7,550	---
Manufacturing wages	10,000	---
Carriage outwards	1,200	---
Provision for doubtful debts	---	525
Rent, rates and taxes	10,000	----
Advertisement	2,000	---
Cash	6,900	---
	2,54,075	2,54,075

Prepare trading and profit and loss account for the year ended 30th September, 2012 and balance sheet on that date after taking into account the following adjustments:

i. Closing stock was valued at Rs.34,220
ii. Provision for doubtful debts is to be kept at Rs.500.
iii. Depreciate plant and machinery @10% p.a.
iv. The proprietor has taken goods worth Rs.5,000 for personal use and additionally distributed goods worth Rs.1000 as samples.

Purchase of furniture Rs.920 has been passed through purchase book.

(OR)

4 A trader makes a profit of 25% on the net sales for the year ending on 31st March, 2011. You are requested to compile the profit and loss account in order to find out net profit or loss for the period with the following information. 12 Marks

Particulars	Dr. Rs.	Particulars	Dr. Rs.
Sales	4,87,500	Returns inwards	37,500
Trade expenses	20,000	Bad debts	20,000
Package expenses	9,000	Bad debts recovered	1,500
Heating and lighting (office)	1,500	Repairs and renewals	1,400
B/R	60,000	Interest on investments	2,500
Interest on capital	7,500	Salesmen Commission	75,000
Advertising	4,500	Selling commission	5,000
Premises	2,00,000	Freight	4,500
Investments	1,50,000	Sundry creditors	1,00,000
Profit on sale of furniture	4,500	Bank charges	500
Insurance	7,500	Sundry debtors	1,50,000
		Legal charges	4,500

UNIT-III

5 What is Over Capitalization? State the causes, effects and remedies of Over Capitalization. 12 Marks

(OR)

6 Define cost of capital. Explain the procedure for calculating weighted average cost of capital. 12 Marks

UNIT-IV

7 What do you mean by CVP analysis? Discuss the issues relating to make or buy, add or drop and product mix. 12 Marks

(OR)

8 From the following information, calculate: 12 Marks

i. P/V ratio ii. Break-even point iii. if the selling price is reduced to Rs.80 Calculate new break-even point:

	Rs.
Total sales	5,00,000
Selling price per unit	100
Variable cost per unit	60
Fixed cost	1,20,000

UNIT-V

9 Explain the following methods of capital budgeting with the advantages and disadvantages of each in details: 12 Marks

(i) Pay-back method. (ii) Accounting Rate of Return method(ARR).

(OR)

10 A Choice is to be made between two competing projects which require an equal investment of Rs. 50,000 and are expected to generate net cash flows as under : 12 Marks

Year	Project I (in Rs.)	Project II (in Rs.)
1	25,000	10,000
2	15,000	12,000
3	10,000	18,000
4	Nil	25,000
5	12,000	8,000
6	6,000	4,000

The cost of capital of the company is 10 percent.

Which project proposal should be chosen and why?

(i) Payback period. (ii) NPV.

CODE No.:14MC1HS02 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC14) Regular Examinations February - 2015

PROFESSIONAL COMMUNICATION

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. What aspects must one keep in mind when communicating with a person (The person may be known to you or he may be an acquaintance) ? 12 Marks

(OR)

2. If there are barriers to communication, they are only psychological. Contradict the statement in light of your observations about communication barriers. 12 Marks

UNIT-II

3. Define Listening and write an essay on how it makes one a better communicator. 12 Marks

(OR)

4. Effective listening is different from just hearing. Explain. 12 Marks

UNIT-III

5. Describe in detail some qualities of good speaking. 12 Marks

(OR)

6. What are the types of speaking and the ways to overcome barriers to effective speaking? 12 Marks

UNIT-IV

7. What are study skills and how do they contribute to one's professional development? 12 Marks

(OR)

8. Describe the various techniques used for good comprehension. 12 Marks

UNIT-V

9. Give reasons for the growing importance of technical English. What are the roles of audience recognition and analysis? 12 Marks

(OR)

10. Write an essay on ‘what is good technical writing’. 12 Marks

CODE No.:14MC10101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC14) Regular Examinations February - 2015

PROGRAMMING THROUGH C

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 With the aid of a block diagram discuss the different units of computer system. 12 Marks

(OR)

2 a) List and give examples for the different types of C tokens. 8 Marks

b) Write the output of the following program. 2 Marks

```
main( )
{
        int x =100;
        printf("%d/n",10 + x++);
        printf("%d/n",10 + ++x);
}
```

c) What is the error in the following statements. 2 Marks

```
i. if(m==1 & n!=0)
        printf("OK");

ii. if(x=<5)
        printf("Jump");
```

UNIT-II

3 a) How two dimensional array will be stored in memory? Explain. 6 Marks

b) Write a program to multiply two 3*3 matrices. 6 Marks

(OR)

4 a) What is an array? Explain the features of an array and their uses. 6 Marks

b) Define Pointer and describe any two of pointer applications. 6 Marks

UNIT-III

5 a) Differentiate between pass-by value and pass-by reference. 6 Marks

b) Write a Recursive function in C to generate a Fibonacci numbers. 6 Marks

(OR)

6 a) Explain about Scope of variables and Storage Classes. 8 Marks

b) What are the uses of functions? Explain. 4 Marks

UNIT-IV

7	Define a structure Customer with members - customer name, account number and balance. Write a C program to read 10 customers information and to give 10% interest to customers who have balance more than 10,000. Display the customer details.	12 Marks

(OR)

8	a) How do you define a structure? How is structure declaration done? Explain with examples.	8 Marks
	b) Write a note on static and dynamic linked list representation.	4 Marks

UNIT-V

9	Briefly explain the different functions used to perform I/O operations on files.	12 Marks

(OR)

10	a) Differentiate between binary files and text files with the help of an example.	6 Marks
	b) Write a C program to append the contents of file2 to the end of file1.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC14) Regular Examinations February - 2015

COMPUTER ORGANIZATION

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a) Explain in detail about the Fixed Point Representation.	6 Marks
	b) What are the different types of Logic Gates? Explain in detail.	6 Marks
	(OR)	
2	a) Simplify the following function in sum of products form by means of a four variable map. F(A,B,C,D)=∑(0,2,8,9,10,11,14,15).	6 Marks
	b) Draw the logic diagram with AND – OR gates.	3 Marks
	c) Draw the logic diagram with NAND gates.	3 Marks

UNIT-II

3	a) Explain the operation of JK- flip flop.	6 Marks
	b) Explain briefly about integrated circuits.	6 Marks
	(OR)	
4	a) Explain the operation of D-flip flop.	6 Marks
	b) Explain briefly about decoders.	6 Marks

UNIT-III

5	a) What is multi-processing? Discuss the role of CPU in multi-processing.	6 Marks
	b) Explain briefly about RISC.	6 Marks
	(OR)	
6	a) List different instruction formats with examples.	7 Marks
	b) Explain briefly about stack organization.	5 Marks

UNIT-IV

7	Explain the control unit of basic computer.	12 Marks
	(OR)	
8	Explain the design of accumulator logic.	12 Marks

UNIT-V

9	a) What is the importance of memory hierarchy?	6 Marks
	b) Briefly explain about various peripheral devices.	6 Marks
	(OR)	
10	a) Explain briefly about Direct Memory Access (DMA).	6 Marks
	b) Differentiate between Main memory and Virtual memory.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC14) Regular Examinations February - 2015

DATA STRUCTURES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Evaluate the given postfix expression (5 6 2 + * 12 4 / -) using a stack and Explain. 12 Marks

(OR)

2 Explain in brief any two stack applications. 12 Marks

UNIT-II

3 a) Give an algorithm to the count number of nodes in a single linked list. 6 Marks
b) Explain with an example the advantage of doubly linked list over singly linked list. 6 Marks

(OR)

4 a) Can we implement a circular queue of size **n** with an array of size **n**? Justify your answer. 4 Marks
b) Explain with an example the advantage of circular queue over normal queue. 4 Marks
c) What is doubly ended queue? 4 Marks

UNIT-III

5 Suppose there are 1 lakh elements indexing from 0 to 99999. If the required element to be searched is at index 157, explain the process of finding the element and number of iterations using Binary search. 12 Marks

(OR)

6 Write a program to sort the elements using Bubble sort and explain the iterations with a suitable example. 12 Marks

UNIT-IV

7 Generate the binary tree, binary search tree and heap for the following elements
22 33 11 44 77 90 40 60 99 55 88 66 12 Marks

(OR)

8 Explain the Basic tree concepts and its terminology. 12 Marks

UNIT-V

9 Explain AVL tree concepts and its algorithms. 12 Marks

(OR)

10 Compare prims and kruskals algorithm with suitable example. 12 Marks

CODE No.:10MC1HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Supplementary Examinations August - 2015

ACCOUNTING AND FINANCIAL MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. "Accounting equation is simply a basis for learning the double entry system and nothing more" - comment.

2. From the following details of M/s. Roshan & Co., you are required to prepare Trading, Profit and Loss Account and the Balance Sheet for the year ended 31st Dec, 2009.

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	1000
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. Provision for Bad and Doubtful Debts at 10% on Debtors.
2. Prepaid interest Rs. 100
3. Outstanding Salaries Rs. 500
4. Interest on capital at 10% p.a.
5. Depreciate plant and machinery at 10% p.a. and Building at 5% p.a.

3. From the following figures, calculate Debt Equity Ratio:

	Rs.
Preference share capital	1,50,000
Equity share capital	5,50,000
Capital Reserve	2,00,000
Profit and Loss Account	1,00,000
6% Debenture	2,50,000
Sundry Creditors	1,20,000
Bills payable	60,000
Provision for taxation	90,000
Outstanding Creditors	80,000

4. In what directions the field of finance evolved in recent years? Also state the objectives and scope

of financial management.

5. From the following Balance Sheets of Ganesh & Co., you are required to prepare statement of sources and application of funds.

Balance Sheets

Liabilities	2007 Rs.	2008 Rs.	Assets	2007 Rs.	2008 Rs.
Share Capital	90,000	1,00,000	Goodwill	12,000	10,000
General Reserve	14,000	18,000	Buildings	40,000	36,000
Profit and Loss A/C	19,500	12,000	Machinery	37,000	36,000
Provision for Taxation	16,000	17,000	Stock	30,000	25,400
Sundry creditors	8,000	5,400	Sundry debtors	20,000	22,200
Bills payable	6,200	1,300	Cash at Bank	6,600	15,200
Provision for Doubtful Debts	1,900	2,100	Investments	10,000	11,000
	1,55,600	**1,55,800**		**1,55,600**	**1,55,800**

Additional Information:
1. Provision of Rs. 5000 was made for taxation during 2008.
2. Depreciation charged on machinery was Rs. 4000 and on buildings Rs. 4000
3. Interim dividend during 2008 was Rs. 7500.

6. What is CVP analysis? Discuss its Managerial uses and limitations.

7. What are the sources of raising capital? Explain the different sources of long-term financing with suitable examples.

8. What is meant by Capital Budgeting? Explain the various methods of Capital Budgeting.

CODE No.:10MC1HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Supplementary Examinations February - 2015

ACCOUNTING AND FINANCIAL MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What are accounting concepts and conventions? Name them and explain any two accounting concepts in detail.

2. From the following balances and information, you are required to prepare final accounts of Mohan Bros. for the year ended 31st March, 2012:

Particulars	Rs.	Particulars	Rs.
Plant and Machinery	49,500	Rent and Taxes	1,951
Depreciation on Plant and Machinery	5,500	Rent outstanding	150
Fixtures and fittings	1,720	Office Expenses	2,778
Fuel and power (factory)	542	Carriage - Purchases	897
Office salaries	4,095	Discount allowed	422
Salary outstanding	350	Drawings	6820
Lighting (factory)	392	Stock (1-4-2011)	21,725
Travelling Expenses	925	Direct sundry expenses	2,680
Carriage as sales	960	Sale returns	7,422
Cash at Bank	2,313	Insurance	570
Trade debtors	47,800	Capital	93230
Purchases (adjusted)	66,710	Sales	1,26,177
Stock (31.03.2012)	16,580	Creditors	22,680
Wages	9,915	Returns outwards	3,172
		Bills payable	6,422

Additional Information:

1. Depreciate furniture and fittings at 10%
2. Provision for bad debts at 2 ½ % on debtors
3. Insurance unexpired Rs. 70 and
4. Outstanding wages Rs. 800.

3. Calculate (a) Current Assets: (b) Liquid Assets; and (c) Inventory.

Current Ratio	2.6:1
Liquid Ratio	1.5 : 1
Current Liabilities	Rs. 40,000

4. In what respect is the objective of wealth maximization superior to the Profit maximization objective?

5. Define Financial Management. “Maximization of Profit is regarded as the proper objective of investment decision. But it is not exclusive of maximizing shareholders wealth” - Do you agree? Comment.

6. Why the cash flow statement is considered necessary in addition to the profit and loss account and balance sheet? Discuss with suitable examples.

7. Elucidate any two approaches to calculate cost of equity.

8. NIIT Ltd. is contemplating to purchase a machine. Two machines A and B are available each costing Rs. 5,00,000. In comparing the profitability of the machines a discounted rate of 10% is to be used. Earnings after taxation are expected as follows:

CASH FLOW

	Rupees	
Year	**Machine A**	**Machine B**
I	1,50,000	50,000
II	2,00,000	1,50,000
III	2,50,000	2,00,000
IV	1,50,000	3,00,000
V	1,00,000	2,00,000

Indicate which of the machines would be profitable using the following methods of ranking investments proposals.

i. Pay back method
ii. Net present value method
iii. Return on investment method.

CODE No.:14MC10101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC14) Supplementary Examinations August - 2015

PROGRAMMING THROUGH C

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Given the statement int a = 10, b = 20, c; 6 Marks
determine whether the following statements are true or false
i. Statement a = +10, is valid
ii. Expression a + 4/6 * 6/2 evaluates to 11
iii. Expression b + 3/2 * 2/3 evaluates to 20
iv. Statement a += b gives the values 30 to a and 20 to b
v. Statement ++a++ gives the value 12 to a
vi. Statement a = 1/b assigns the value 0.5 to a

b) Write a C program to count number of vowels and consonants in a given line of text using switch statement. 6 Marks

(OR)

2 a) Write a note on while, do...while and for looping constructs in C. 6 Marks

b) Write a C program to generate prime numbers between 1 and 100. 6 Marks

UNIT-II

3 a) Write a C program to read a number series and print it reversed. 6 Marks

b) Explain memory allocation functions with suitable examples. 6 Marks

(OR)

4 a) Explain arithmetic operations on pointers with an example. 6 Marks

b) Explain malloc, alloc, realloc and free functions in C language. 6 Marks

UNIT-III

5 a) Write a C program to demonstrate pass by reference. 6 Marks

b) Explain the concept of storage classes in C with suitable examples. 6 Marks

(OR)

6 a) Write a C program to demonstrate pass by value. 6 Marks

b) Explain user system defined functions with suitable examples. 6 Marks

UNIT-IV

7 a) Explain Enumerated Data types with example. 6 Marks

b) Describe about Structure declaration and initialization. 6 Marks

(OR)

8 a) Differentiate between Array and Structure. 6 Marks

b) What is Anonymous structure? Give an example. 6 Marks

UNIT-V

9 List and explain different modes of opening a file with example. 12 Marks

(OR)

10 a) Differentiate between sequential and random access to files with example. 8 Marks

b) Write a note on macro substitution. 4 Marks

CODE No.:14MC10102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC14) Supplementary Examinations August - 2015

COMPUTER ORGANIZATION

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Perform the subtraction with the following unsigned decimal numbers by taking the 10's complement of the subtrahend. i) 100-110000 ii) 1010100-1010100	6 Marks
	b)	Simplify the following Boolean function F(A,B,C,D) =∑(0,2,4,5,6,7,8,10,13,15).	6 Marks
2	a)	Explain error detection codes.	6 Marks
	b)	Using De Morgan's theorem, show that: i) (A+B) ' (A ' +B') =0 ii) A + A'B + A'B'=1	6 Marks

UNIT-II

3	a)	Explain the operation JK master -slave flip-flop.	7 Marks
	b)	Draw 2-to-4 line decoder using NAND gates and explain the operation of it.	5 Marks
		(OR)	
4		Construct a 16-to-1-line multiplexer with two 8-to-1-line multiplexers and one 2-to-1-line multiplexer.	12 Marks

UNIT-III

5	a)	What is the difference between a branch instruction, a call subroutine instruction and a program interrupt?	6 Marks
	b)	Explain addressing modes.	6 Marks
		(OR)	
6		Explain general register organization.	12 Marks

UNIT-IV

7		Explain the interrupt cycle along with flowchart.	12 Marks
		(OR)	
8		Explain the design of accumulator logic.	12 Marks

UNIT-V

9	a)	Explain briefly about Direct Memory Access (DMA).	6 Marks
	b)	Briefly explain about various peripheral devices.	6 Marks
		(OR)	
10	a)	Write short notes on asynchronous data transfer.	6 Marks
	b)	Differentiate between isolated I/O and memory mapped I/O.	6 Marks

CODE No.:14MC10103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC14) Supplementary Examinations August - 2015

DATA STRUCTURES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the different mathematical notations used for algorithm analysis?	6 Marks
	b)	Discuss the components for the space needed by a program.	6 Marks
		(OR)	
2		Write an algorithm to implement stack ADT operations using arrays.	12 Marks

UNIT-II

3		Write a program to perform the operations of queues.	12 Marks
		(OR)	
4		What are the different types of linked lists and explain with neat figures?	12 Marks

UNIT-III

5	a)	Write an algorithm to sort the elements whose worst and average cases are 0 (n log n).	6 Marks
	b)	Consider the list of elements: -15, -6, 0, 7, 9, 23, 54, 82, 101, 112, 125, 131, 142, 151. Trace the Binary search algorithm searching for elements 151, -14, 9 respectively.	6 Marks
		(OR)	
6		Write a program to sort given elements by using Heap sort with suitable example	12 Marks

UNIT-IV

7	a)	What are the minimum and the maximum heights of a binary tree with ***n*** nodes?	5 Marks
	b)	Let T be a Binary Search Tree with n nodes (each node contains an integer). Give a procedure to sort all n integers in ascending order without using any known sorting algorithm.	7 Marks
		(OR)	
8		Construct a Binary Tree to satisfy the following orders : In order : 6 13 18 28 33 41 48 58 68 80 Pre order : 41 13 6 28 18 33 58 48 80 68	12 Marks

UNIT-V

9	a)	Define Graph and explain the different representations of graph.	6 Marks
	b)	Create AVL tree for the elements: 22, 67, 90, 45, 100, 200, 300, 2.	6 Marks
		(OR)	
10	a)	Define a Red-Black tree? Write the procedures to perform insertion, deletion in a Red-Black tree.	6 Marks
	b)	Describe Dijkstra's algorithm for single source shortest path problem.	6 Marks

CODE No.:14MC2BS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC14) Regular Examinations August - 2015

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 the addition and multiplication rules of probability giving one example of each one. 6 Marks

b) In a certain colony, 65% of the families own a car, 35% own a computer and 25% own both a car and a computer. If a family is randomly chosen, what is the probability that this family owns a car or a computer but not both? 6 Marks

(OR)

2 a) Define discrete random variable and also explain about the probability mass function. 6 Marks

b) Find a formula for the probability distribution of the total number of heads obtained in four tosses of a balanced coin? 6 Marks

UNIT-II

3 Fit a Poisson distribution to the following data and calculate the theoretical frequencies 12 Marks

X:	0	1	2	3	4
F:	123	59	14	3	1

(OR)

4 Describe how you construct a $\overline{X}$ - chart and R- chart and explain their uses. 12 Marks

UNIT-III

5 Find the rank correlation for the following data. 12 Marks

x	65	63	67	64	68	62	70	66	68	67	69	71
y	68	66	68	65	69	66	68	65	71	67	68	70

(OR)

6 The two lines obtained in a correlation analysis are as follows: 12 Marks
5x+10y=145, 8x+14y=208.
Obtain (i) correlation coefficient, (ii) Mean values of X and Y.

UNIT-IV

7 a) Define sampling distribution and standard error. Obtain standard error of mean when population is large. 6 Marks

b) A coin is tossed 100 times and it turns up head 50 times. Discuss whether the coin may be regarded as unbiased one or not. 6 Marks

(OR)

8 a) Define large sample test for proportions. Explain its applications. 6 Marks

b) A random sample of 500 apples was taken from a large consignment and 60 were found to be bad. Obtain the 98% confidence limits for the percentage of bad apples in consignment. 6 Marks

UNIT-V

9 Ten individuals are chosen at random from a normal population and their heights are found to be 63, 63, 66, 67, 68, 69, 70, 70, 71, 71 inches. Test if the sample belongs to the population whose mean height is 66 inches. (Given $\mathbf{t_{0.05}} = 2.62$ for 9 d.o.f). 12 Marks

(OR)

10 Among 64 offspring's of certain cross between guinea pigs 34 were red, 10 were black and 20 were white. According to the genetic model these numbers should be in the ratio 9**:**3**:**4. Are the data consistent with the model at 5 % level? 12 Marks

CODE No.:14MC2HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC14) Regular Examinations August - 2015

PROFESIONAL ETHICS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the applications of Engineering Ethics?	6 Marks
	b)	What are the types of moral dilemmas?	6 Marks
		(OR)	
2	a)	Briefly discuss Gilligan's theory.	6 Marks
	b)	Explain normative enquiry.	6 Marks

UNIT-II

3	a)	Discuss briefly on ethical theory of RIGHT ACTION. Differentiate Act-Utilitarian and Rule Utilitarian.	6 Marks
	b)	Briefly discuss about the uses of ethical theories.	6 Marks
		(OR)	
4	a)	Explain in detail the qualities of professional practitioners.	6 Marks
	b)	Write short notes on Ethical egoism.	6 Marks

UNIT-III

5		Write notes on:	
	a)	Engineers as responsible experimenters.	6 Marks
	b)	Engineers as social experimenters.	6 Marks
		(OR)	
6	a)	What is code of ethics? What are its advantages?	6 Marks
	b)	What are the contents of code of ethics for engineering profession?	6 Marks

UNIT-IV

7	a)	Explain in detail about white collar crimes.	6 Marks
	b)	Briefly discuss about types of whistle blowing moral guidelines and procedures of whistle blowing.	6 Marks
		(OR)	
8	a)	Discuss about collective bargaining and argument.	6 Marks
	b)	Write short notes on conflicts of interest.	6 Marks

UNIT-V

9	a)	Explain the association of technology transfer and appropriate technology with the MNC.	6 Marks
	b)	Write briefly about salient features of computer ethics.	6 Marks
		(OR)	
10	a)	How weapons development in defence could be considered as an important global issue?	6 Marks
	b)	Explain in brief normative morals for advisors with suitable examples.	6 Marks

CODE No.:14MC20101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC14) Regular Examinations August - 2015

OPERATING SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write about client-server computing.	4 Marks
	b)	Write about peer-to-peer computing.	4 Marks
	c)	Write about web-based computing.	4 Marks
		(OR)	
2		Explain about operating system structure.	12 Marks

UNIT-II

3	a)	Write about scheduling queues.	6 Marks
	b)	Explain about context switch.	6 Marks
		(OR)	
4	a)	Write about first-come, first-served scheduling algorithm.	6 Marks
	b)	Discuss about shortest-job-first scheduling algorithm.	6 Marks

UNIT-III

5	a)	What is a deadlock?	2 Marks
	b)	Explain the necessary conditions that must hold for a deadlock to occur.	5 Marks
	c)	Discuss Bankers Algorithm with an example.	5 Marks
		(OR)	
6	a)	What is a critical section? What are its properties?	6 Marks
	b)	Explain the use of binary semaphores in implementing the critical section.	6 Marks

UNIT-IV

7	a)	What is segmentation? How is it implemented?	6 Marks
	b)	What is thrashing and what causes thrashing?	3 Marks
	c)	How thrashing can be prevented?	3 Marks
		(OR)	
8		Consider the following page reference string: 1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5, 4, 2. How many page faults would occur for the following page replacement algorithms, assuming three and four frames? Assuming frames are initially empty. i) LRU replacement ii) FIFO replacement iii) Optimal replacement	12 Marks

UNIT-V

9		Explain the implementation of protection through access matrix.	12 Marks
		(OR)	
10	a)	What are the different Classes of Faults?	6 Marks
	b)	Discuss Fault Tolerance Techniques.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC14) Regular Examinations August - 2015

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		Discuss the object oriented principles Encapsulation, Inheritance and Polymorphism in Java.	12 Marks

(OR)

2	a)	Explain the syntax of Java Buzz words with examples.	6 Marks
	b)	Explain the data types and operators in Java.	6 Marks

UNIT-II

3	a)	Differentiate Call-by-value and recursion with suitable example.	6 Marks
	b)	Explain the overloading methods with example.	6 Marks

(OR)

4	a)	Explain the importance of Garbage collection with suitable example.	6 Marks
	b)	Discuss on Nested classes and Wrapper classes with examples.	6 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

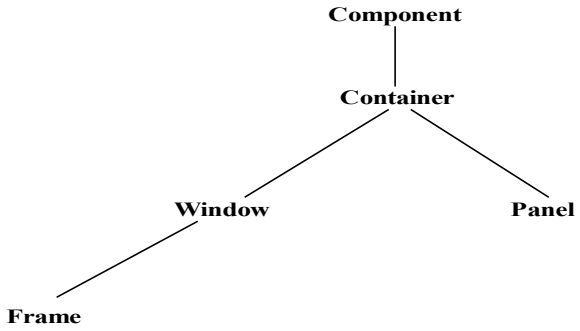
7	a)	What is Exception Handling? Write a suitable program on Exception Handling.	6 Marks
	b)	Explain the different file operations in Java with suitable examples.	6 Marks

(OR)

8	a)	What is Multithreading? What are the different states of Thread life cycle?	6 Marks
	b)	Explain the concept of synchronization with an example program.	6 Marks

UNIT-V

9		Explain each element in the following structure supported by AWT.	12 Marks



(OR)

10		The two key features of Swing: ***lightweight components*** and a ***pluggable look and feel***. Justify. Also demonstrate the **JCheckBox** class that provides the functionality of a check box.	12 Marks

CODE No.:14MC20103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC14) Regular Examinations August - 2015

DATABASE MANAGEMENT SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the advantages of DBMS over traditional file-processing system?	6 Marks
	b)	Explain different roles of database administrator.	6 Marks
		(OR)	
2	a)	What are the characteristics of Database approach?	6 Marks
	b)	Explain how data independence is achieved.	6 Marks

UNIT-II

3	a)	Explain with example, the key constraints for ternary relationships.	6 Marks
	b)	Explain the need to restrict view updates with a suitable example.	6 Marks
		(OR)	
4	a)	Explain class hierarchies. What are the two basic reasons for identifying subclasses?	8 Marks
	b)	With a suitable example, explain how entity set is mapped to a relation.	4 Marks

UNIT-III

5	a)	Explain in detail about the First and Second Normal Forms.	5 Marks
	b)	What is a trigger? How is integrity constraints enforced?	7 Marks
		(OR)	
6	a)	Define BCNF. How does BCNF differ from 3NF? Explain with an example.	7 Marks
	b)	With example, explain Outer joins in SQL.	5 Marks

UNIT-IV

7	a)	What are the four important properties of transactions that a DBMS must ensure to maintain data in the face of concurrent access and system failures?	6 Marks
	b)	What are the Other Recovery-Related Data Structures in addition to log? Explain.	6 Marks
		(OR)	
8	a)	How does the two phase locking protocol ensures Serialazability?	8 Marks
	b)	Write a short note on Check pointing.	4 Marks

UNIT-V

9	a)	Reliability of a disk array can be increased by storing redundant information. Justify.	7 Marks
	b)	Discuss in detail about the Clustered versus Unclustered Indexes.	5 Marks
		(OR)	
10	a)	What are the operations that considered for choosing appropriate file organization? Explain.	6 Marks
	b)	Explain the format of node for B+ tree with example.	6 Marks

CODE No.:14MC20104 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC14) Regular Examinations August - 2015

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		Differentiate the following:	
	a)	Forward Engineering.	4 Marks
	b)	Reengineering.	4 Marks
	c)	Reverse Engineering.	4 Marks
		(OR)	
2	a)	Explain about software process frame work.	6 Marks
	b)	Briefly write on CMMI guidelines.	6 Marks

UNIT-II

3		Describe any two Evolutionary process models.	12 Marks
		(OR)	
4	a)	Discuss about Requirement Elicitation and Analysis.	8 Marks
	b)	Define agile methods and agile process.	4 Marks

UNIT-III

5	a)	Discuss on Data dictionary.	3 Marks
	b)	Explain Architectural mapping using data flow.	9 Marks
		(OR)	
6	a)	Explain E-R diagrams.	6 Marks
	b)	Discuss software design, design quality guidelines and attributes.	6 Marks

UNIT-IV

7	a)	Give the differences between verification and validation.	4 Marks
	b)	What are the different testing types required to test a web application? Elaborate each testing type in detail.	8 Marks
		(OR)	
8	a)	Give the pictorial representation of user interface design process.	4 Marks
	b)	Explain user interface analysis and design.	8 Marks

UNIT-V

9	a)	Briefly discuss about Reactive and Proactive risk strategies.	8 Marks
	b)	What is RMMM Plan?	4 Marks
		(OR)	
10	a)	Write a note on software Equation.	6 Marks
	b)	Explain process based Estimation.	6 Marks

CODE No.:10MC2BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Supplementary Examinations August - 2015

PROBABILITY AND STATISTICS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Give any two definitions of probability. State addition theorem of probability.
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?

2. a) if X is a random variable and K is a constant, then prove that
(i) $E(X+K) = E(X) + K$ (ii) $V(ax+b) = a^2V(x)$
b) A player tosses 3 fair coins. He wins Rs. 500 if 3 heads appear, Rs. 300 if 2 heads appear, Rs. 100 if 1 head occurs. On the other hand, he loses Rs. 1500 if 3 tails occur. Find the expected gain of the player.

3. a) Obtain the mean and variance of Binomial distribution.
b) What is Normal distribution? Give it's importance.

4. a) The mean and standard deviation of a population are 11,795 and 14,054 respectively. What can one assert that 95% confidence about the maximum error if $\overline{X}$ = 11,795 and n = 50. And also construct 95% confidence interval for the true mean.
b) A normal population has a mean of 0.1 and standard deviation of 2.1. Find the probability that mean of a sample of size 900 will be negative.

5. a) Write about Type-I error and Type-II error.
b) A manufacturer of electronic equipment subjects samples of two completing brands of transistors to an accelerated performance test. If 45 of 180 transistors of the first kind and 34 of 120 transistors of the second kind fail the test, what can he conclude at the level of significance α = 0.05 about the difference between the corresponding sample proportions?

6. a) What are the applications of t and $\chi 2$ tests?
b) Examine the effect of vaccine in controlling the incidence of the disease from the following results:

	Disease affected	Disease unaffected
Inoculated	12	28
Not Inoculated	13	7

7. a) Distinguish between Correlation and Regression analysis.
b) Find the rank correlation coefficient from the following data which relates the ranking of 10 students in two subjects Statistics and Computer Science.

Statistics:	3	4	1	7	9	2	10	5	8	6
Computer Science:	4	2	6	1	7	5	3	10	9	8

8. a) Discuss the need and utility of statistical quality control.
b) During an examination of equal length of cloths the following are the number of defects observed.
2, 3, 4, 0, 5, 6, 7, 4, 3, 2
Draw a control chart for the number of defects and comment whether the process is under control or not.

CODE No.:10MC2BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Supplementary Examinations January - 2015

PROBABILITY AND STATISTICS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove Baye's Theorem.
b) In a certain college, 40% of men and 10% of women are taller than 1.8 meters. Further more in the college 60% of students are women. If a student is selected at random and is taller than 1.8 meters, find the probability that the selected student is a woman.

2. a) Find the value of K and mean of the random variable X whose probability density function is $f(x) = K x e^{-x}, \quad 0 < x < \infty$
b) Find the mean and variance of the uniform probability distribution given by
$f(x) = \frac{1}{n} \; for \; x = 1, 2, 3, \ldots n$

3. a) Derive the Poisson distribution as a limiting case of Binomial distribution.
b) Explain Normal distribution. Give its properties.

4. a) The mean and standard deviation of a population are 11,795 and 14,054 respectively. What can one assert that 95% confidence about the maximum error if $\overline{X}$ = 11,795 and n = 50. And also construct 95% confidence interval for the true mean.
b) A normal population has a mean of 0.1 and standard deviation of 2.1. Find the probability that mean of a sample of size 900 will be negative.

5. a) What are Type I and Type II errors? Define level of significance.
b) Random samples of 500 men and 600 women were asked whether they would like to have a Flyover near their residence. 200 men and 350 women were in favour of the proposal. Test whether the proportions of men and women in favour of proposal are the same. Use 5% level of significance.

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 one sample of 8 observations the sum of the squares of deviations of the sample values from the sample mean was 84.4 and in the other sample of 10 observations it was 102.6. Test whether this difference is significant at 5**%** level.

7. a) Compute the co efficient of correlation between X and Y using the following data

X	65	67	66	71	67	70	68	69
Y	67	68	68	70	64	64	72	70

b) Given $\bar{x} = 19.5, \bar{y} = 17.75, \sigma_x = 1.75, \sigma_y = 2.5, \gamma_{xy} = 0.8$. Find the line of regression of X on Y.

8. a) Discuss the need and utility of statistical quality control.

b) During an examination of equal length of cloths the following are the number of defects observed.

2, 3, 4, 0, 5, 6, 7, 4, 3, 2

Draw a control chart for the number of defects and comment whether the process is under control or not.

CODE No.:10MC20101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Supplementary Examinations January - 2015

COMPUTER ARCHITECTURE AND ORGANIZATION

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the logic diagram and list the truth table for the following Boolean function.
F = ABC + ABC' + A'C
b) Simplify the following Boolean expression using four variable map.
F (A, B, C, D) = ∑ (3,7, 11,13,14,15).

2. a) Distinguish between SR, D, JK and T flip flops.
b) Define multiplexer. Explain 4 x 1 multiplexer with a neat logic diagram.

3. a) Explain arithmetic logic shift unit.
b) Describe instruction cycle.

4. Explain the instruction cycle in detail.

5. 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?

6. a) Explain half adder and full adder circuit in detail
b) How many 128 x 8 RAM chips needed to provide memory capacity of 2048 bytes?
How many lines of address 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?

7. a) Write short notes on handshaking method.
b) Explain Input-Output Procedure (IOP) with neat diagram.

8. a) What are interconnection structures? Explain.
b) Explain briefly about shared memory multiprocessors.

CODE No.:10MC20102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Supplementary Examinations January - 2015

OPERATING SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the characteristics of an operating system.
b) What is meant by a virtual machine? Discuss about Real-time systems.

2. a) Describe the file accessing methods and file system structure.
b) Explain any two File Allocation Methods.

3. What is the purpose of processor scheduling? Explain various types of scheduling for uniprocessor system.

4. Explain how deadlocks are prevented.

5. a) What are the conditions that must satisfy for deadlock occurrence and explain them with an example?
b) Explain about deadlock recovery methods.

6. a) Explain the difference between logical and physical addresses.
b) Why are segmentation and paging combined into one scheme?
c) Explain briefly the use of inverted page table.

7. Describe the model of protection, an Access Matrix with its Implementation in detail.

8. Discuss in detail Byzantine Faults and Agreement protocols.

CODE No.:10MC3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Regular/Supplementary Examinations January - 2015

OPERATIONS RESEARCH

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Use Duality to solve the following L.P.P.

Maximize $Z = 2x_1 + x_2$

Subject to the Constraints : $x_1 + 2x_2 \le 10$

$x_1 + x_2 \le 6$

$x_1 - x_2 \le 2$

$x_1 - 2x_2 \le 1, \quad x_1, x_2 \ge 0.$

2. Find the Initial Basic Feasible Solution of the following transportation problem by Vogel's Approximation method.

		Warehouse Capacity				
		W1	W2	W3	W4	
Factory	F1	19	30	50	10	7
	F2	70	30	40	60	9
	F3	40	8	70	20	18
Requirement		5	8	7	14	34 (Total)

3. There are 5 jobs, each of which must go through machines A, B and C in the order ABC. Processing times are given below:

Job	Processing Time		
	A	B	C
1	8	5	4
2	10	6	9
3	6	2	8
4	7	3	6
5	11	4	5

Determine a sequence of jobs which will minimize the elapsed time.

4. Determine the optimal sequence of performing 5 jobs on 4 machines. The machines are used in order M1, M2, M3 and M4 and the processing time is given below.

Job	M1	M2	M3	M4
1	8	3	4	7
2	9	2	6	5
3	10	6	6	8
4	12	4	1	9
5	7	5	2	3

5. The following table gives running costs per year and resale price of a certain equipment, whose purchase price is Rs. 5,000

Year	:	1	2	3	4	5	6	7	8
Running Costs	:	1500	1600	1800	2100	2500	2900	3000	4000
Resale Value	:	3500	2500	1700	800	500	500	500	500

Find optimal replacement time of the equipment.

6. Using the dominance probability, obtain the optimal strategies for both the players and

determine the value of the game. The pay off matrix for player A is given below

		Player B				
		I	II	III	IV	V
Player A	I	2	4	3	8	4
	II	5	6	3	7	8
	III	6	7	9	8	7
	IV	4	2	8	4	3

b) Discuss the rectangular games without saddle points.

7. a) A leading orchard owner of Srinagar has annual demand of 60,000 wooden packing boxes. The cost of placing an order is Rs 800 and the inventory carrying cost is 25 percent. The price of a packing case is Rs. 10. The supplier of the boxes offers 2 percent discount if 10,000 or more boxes are purchased and 4% if 15,000 boxes are purchased. What should be the quantity of boxes ordered and should the orchard owner accept the discount?

b) Explain the steps to develop an Inventory model.

8. Distinguish between PERT and CPM.

CODE No.:10MC30101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Regular/Supplementary Examinations January - 2015

WEB APPLICATION DEVELOPMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What is Java script? What are event handlers? Write a Java script to detect browser name and version.

2. Write about XML name spaces.

3. Give an outline code with the necessary steps to access a database using JDBC.

4. Explain life cycle of a java servlet. Write a Simple servlet that reads three parameters from the form data.

5. Explain the process of testing the tomcat server.

6. Explain how to do conditional processing and embed java code in pages using JSP scripting elements.

7. Explain various struts supporting components.

8. Explain about the structure of a SOAP message.

CODE No.:10MC30102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Regular/Supplementary Examinations January - 2015

COMPUTER NETWORKS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Compare Star and Mesh topology.
b) What are the categories of Networks?

2. a) What is a Communication Satellite? What is its main character (Orbit wise)?
b) Explain about Multiplexing.

3. What are different Error detection and Retransmission methods?

4. Explain Distance Vector Routing and Link State routing algorithms.

5. Discuss about Transport Layer quality of service parameters.

6. Briefly explain the following:
i) DNS
ii) SMTP
iii) FTP

7. Explain Digital Signatures.

8. Discuss about Steganography.

CODE No.:10MC30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Regular/Supplementary Examinations January - 2015

DATA WAREHOUSING AND DATA MINING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is the need for data warehousing?
b) Discuss the three tier architecture of a data warehouse.

2. a) With an example, explain snowflake schema.
b) List the functionalities of transformation tools.

3. a) Discuss various OLAP operations.
b) Give the classifications of data mining systems.

4. a) Normalize the data : 200, 300, 400, 600 and 1000 using
i. Min-Max normalization by setting min=0 and max =1.
ii. Z-score normalization
b) Illustrate data transformation techniques with examples.

5. a) Discuss principal component analysis.
b) Discuss various methods for data cleaning.

6. What are the methods used to evaluate and increase the accuracy of a classifier?

7. Explain :
a) Time-series analysis.
b) Partitioning methods.

8. Describe the various data mining functionalities that can be applied on text databases. Discuss with suitable examples.

CODE No.:10MC30104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Regular/Supplementary Examinations January - 2015

SOFTWARE ENGINEERING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Define Software Engineering. Explain the generic process framework for software engineering.

2. Write a detailed note on Extreme Programming.

3. State and explain functional and functional requirements in detail.

4. Explain Architectural design with the help of necessary diagrams.

5. Explain the Interface design steps and explain user interface design pattern.

6. Explain validation testing and system testing.

7. Explain in detail Control Structure testing .

8. Explain Risk Management in detail.

CODE No.:10MC3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Supplementary Examinations July - 2015

OPERATIONS RESEARCH

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Solve by the Simplex method

Minimize $Z = 40X_1 + 24X_2$

Subject to $50X_1 + 20X_2 \geq 4800$, $50X_1 + 80X_2 \geq 7200$, Where $X_1, X_2 \geq 0$.

2. Solve the following transportation problem by Volgel's approximation method;

		DESTINATIONS						
		D1	D2	D3	D4	D5	D6	
ORIGINS	01	5	3	7	3	8	5	3
	02	5	6	12	5	7	11	4
	03	2	1	2	4	8	2	2
	04	9	6	10	5	10	9	8
		3	3	6	2	1	2	

3. Consider the problem of assigning five jobs to five persons. The assignment costs are given below. Determine the optimal assignment schedule.

	Job				
Person	1	2	3	4	5
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

4. Find the sequence that minimize the total elapsed time required to complete the following tasks. Each job is processed in the order ABC.

		Job						
		1	2	3	4	5	6	7
Machine	A	12	6	5	11	5	7	6
	B	7	8	9	4	7	8	3
	C	3	4	1	5	2	3	4

5. A firm is considering replacement of a machine, whose cost price is Rs.12,200 and the scrap value Rs.200. The running (maintenance and operating) costs in Rs. Are found from experience to be as follows :

Year :	1	2	3	4	5	6	7	8
Running Cost :	200	500	800	1200	1800	2500	3200	4000

When should the machine be replaced?

6. a) Solve the following game by using the principle of dominance

	Player B						
Player A		1	2	3	4	5	6
	1	4	2	0	2	1	1
	2	4	3	1	3	2	2
	3	4	3	7	-5	1	2
	4	4	3	4	-1	2	2
	5	4	3	3	-2	2	2

b) Explain Maxi-Min and Mini-Max principle used in game theory

7. a) What are the economic parameters of Inventory?

b) Find the optimum order quantity for a product for which the price breaks are as follows :

Quantity	Unit Cost(Rs.)
$0 \leq Q_1 \leq 800$	1.00
$800 \leq Q_2$	0.98

The yearly demand for the product is 1,600 units per year , cost of placing an order is Rs.5, the cost of storage is 10% per year .

8. Compare CPM and PERT by explaining similarities and mentioning where they mainly differ.

CODE No.:10MC30102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Supplementary Examinations July - 2015

COMPUTER NETWORKS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain the functioning of 7 layers of OSI model.

2. Write about multiplexing.

3. Explain shortest path Routing Algorithms.

4. Explain Network Layer design issues.

5. Write about elements of transport protocol.

6. Write a short notes on the following;
i) Domain Name Systems.
ii) Multimedia.

7. What is meant by Cryptography? Explain any one Public Key Algorithm.

8. Explain how authentication is achieved using Shared Secret Key.

CODE No.:10MC30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Supplementary Examinations July - 2015

DATA WAREHOUSING AND DATA MINING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What is data warehouse? List and explain all the components of a data warehouse.

2. Explain in detail about the snowflake schema. How does snow flake schema different from a star schema? Name any two advantages and disadvantages of snowflake schema.

3. a) Discuss various OLAP operations.
b) Give the classifications of data mining systems.

4. a) Discuss the techniques for attribute reduction.
b) Briefly explain the concept of hierarchy generation.

5. Explain "FP-Growth" algorithm with an example.

6. Explain the process of classification by back propagation algorithm.

7. Explain various data types used in cluster analysis.

8. a) What are the different measures used for text retrieval?
b) Discuss about any two document dimensionality reduction methods.

CODE No.:10MC30104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Supplementary Examinations July - 2015

SOFTWARE ENGINEERING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What is software, software engineering process? Discuss generic process model.

2. Discuss incremental process models in detail. Also, discuss their merits and demerits as compared to other models.

3. Explain in detail Requirements elicitation and analysis.

4. Explain Architectural design with the help of necessary diagrams.

5. Discuss the various interface design steps.

6. What is software testing? Discuss the various test strategies.

7. What are the characteristics of Testability and what are Test Characteristics? Explain.

8. Explain risk identification, risk monitoring and risk management.

CODE No.:10MC4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Regular/Supplementary Examinations July - 2015

ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCE MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Define Management. What are the social responsibilities of modern management?

2. Explain the concept and meaning of Organizational Behavior. What are the characteristics of Organizational Behavior?

3. What are the individual dimensions of Organizational Behavior?

4. Discuss the concept of perception. Explain the process of perception.

5. State the essentials of Human Capital Management.

6. Discuss job analysis. Explain the nature and process of job analysis.

7. What are the barriers to effective selection?

8. What is Globalization? How its effect Human Resource Management?

CODE No.:10MC40101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Regular/Supplementary Examinations July - 2015

UNIX PROGRAMMING USING C ++

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain the main features of UNIX operating system.

2. Write a shell script for generating grades for the list of students given in an input files. Each student record contains roll number, name, minor, mid and end exam marks. Assume appropriate ranges of marks for awarding grades.

3. Explain about inheritance and virtual functions of C++.

4. Explain the relationship of C stream pointers and file descriptors, directory files with examples.

5. Explain the file and record locking with illustrations.

6. Discuss the features of Interval timers, POSIX.1b timers and usage of timer class.

7. Explain about POSIX semaphores with a suitable example.

8. Using stream sockets write a client-server program for sending the contents of a given argument file by the client. (Client sends the name of the file and server sends back contents of the file.)

CODE No.:10MC40102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Regular/Supplementary Examinations July - 2015

MULTIMEDIA APPLICATION DEVELOPMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. List the line drawing algorithms. Explain any one line drawing algorithm with an example.

2. a) What is an animation? How to design an animation sequence?
b) What are different functions of computer animation? Explain.

3. What are the color models in video? Explain in detail.

4. What are the core concepts of action script? Explain each concept.

5. Discuss about events and event handling in action script.

6. Write about programmatic animation.

7. Explain in detail about various audio compression techniques.

8. What is the use of multimedia over ATM networks? Explain each advantage.

CODE No.:10MC40104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Regular/Supplementary Examinations July - 2015

INFORMATION RETRIEVAL SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Discuss the functional overview of Information Retrieval Systems.

2. Explain in detail about the Search Capabilities.

3. Explain indexing process in detail.

4. Write short notes on N-Gram Data structures and Hypertext Data Structures.

5. Compare and contrast Statistical Indexing and Concept Indexing.

6. What is Clustering? Discuss briefly about Item Clustering.

7. Discuss about ranking algorithm and relevance feedback technique.

8. What are the measures used in system evaluation?

CODE No.:10MC40108

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Regular/Supplementary Examinations July - 2015

SOFTWARE PROJECT MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the attributes of good software cost estimate.
b) Write about the three generations of software economics leading to the target objective.

2. Explain in detail how to reduce the software product size.

3. a) What are the primary objectives and essential activities of Elaboration phase?
b) Explain Pragmatic artifacts.

4. Explain the Management and Technical perspective of Software Architecture.

5. Explain about the following:
i) Cost and schedule estimation.
ii) Pragmatic planning.

6. a) Explain the Evolution of Organization with a neat diagram.
b) Explain the tools in Process Automation.

7. Discuss in detail the process Discriminants.

8. Explain the following:
i) Modern software economics.
ii) Culture shifts.

CODE No.:10MC4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Supplementary Examinations January - 2015

ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCE MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain SWOT analysis and social responsibilities of Management.

2. Define Organizational Behaviour. Explain its characteristic features and important models.

3. Explain the concept of behavior. How managerial implications have impact on individual behavior?

4. Explain the managerial application of perception. What are the components of learning process?

5. Discuss Human resource management. What are the functions and objectives of HRM?

6. Define Job Design. Explain the factors that influence Job Design.

7. Discuss the nature and importance of recruitment. Explain the process of recruitment.

8. What do you mean by training? Explain the gaps in training.

CODE No.:10MC40101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Supplementary Examinations January - 2015

UNIX PROGRAMMING USING C ++

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain in detail about the UNIX file system.

2. Discuss the different problem solving approaches in UNIX.

3. Explain the concepts of friend functions and class with examples.

4. Explain about POSIX development environment.

5. Explain the concepts of FIFO file class and Device file class.

6. What is signal? Explain the sigsetjmp and siglongjmp APIs.

7. Describe in brief about System V IPC interface functions.

8. Explain the client/server message handling example with illustration.

CODE No.:10MC40102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Supplementary Examinations January - 2015

MULTIMEDIA APPLICATION DEVELOPMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What are the various hard copy devices required to run Graphics. Explain the functions of any three hard devices.

2. Explain key frame systems and motion specifications.

3. What are the most popular file formats in image? Explain in detail.

4. What are the different animation techniques? Explain.

5. Write about events and display hierarchies.

6. Write about drawing with vectors.

7. Explain video compression with motion compensation.

8. Explain the transport of MPEG-4 onto WWW.

CODE No.:10MC40104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Supplementary Examinations January - 2015

INFORMATION RETRIEVAL SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Discuss the objectives of Information Retrieval Systems. Write briefly about Digital Libraries and Data Warehouses.

2. Explain in detail about the Browse Capabilities.

3. Explain briefly about Indexing by Term and Indexing by Concept.

4. Explain Hyper text data structure in detail.

5. Explain in detail Simple Term Frequency Algorithm and Inverse Document Frequency.

6. Describe Thesaurus Generation and Item Clustering in brief.

7. Write short notes on the following:
   a) Searching the Internet and Hypertext.
   b) Information Visualization Technologies.

8. What are Text Search Algorithms? Describe Software Text Search Algorithms.

CODE No.:10MC40108

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Supplementary Examinations January - 2015

SOFTWARE PROJECT MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the sequence of events that are typical for most contractual software efforts.
b) Explain how Return On Investment (ROI) profile can be achieved in subsequent efforts across life cycles of various domains.

2. a) Discuss the important trends in improving software economics.
b) List the five characteristics of a successful object oriented project.

3. Explain the Management Artifacts in detail.

4. a) Summarize the importance of software architecture and its close linkage with modern software development process.
b) Explain the workflow of iteration with a neat diagram.

5. Explain the major and minor Milestones in brief.

6. Discuss in detail the Project Environment in Process Automation.

7. Explain in detail the Pragmatic Software Metrics.

8. Discuss CCPDS-R software project in detail.

CODE No.:10MC50102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Supplementary Examinations July - 2015

MANAGEMENT INFORMATION SYSTEM

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Describe the MIS organization within the company.

2. Define Planning. Explain in detail about the strategic planning process.

3. What are the components of DSS? Explain them in detail.

4. Explain in detail about Planning Cycle and planning Techniques.

5. What is subsystem? What information need for defining subsystem?

6. Explain in detail about Operating Subsystems and Information Flows with a neat sketch.

7. Describe the Computer related acquisitions for MIS implementation.

8. Explain about pitfalls in MIS Development process.

CODE No.:10MC50101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Supplementary Examinations July - 2015

OBJECT ORIENTED ANALYSIS AND DESIGN

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the principles of modeling.
b) Discuss the Building Blocks in the UML.

2. Explain in detail about Unified Approach.

3. a) What are the common properties and uses of class diagram?
b) How do you model a logical database schema?

4. a) Draw a collaboration diagram for "Online Movie Ticket Reservation System"
b) Draw a sequence diagram for "Library Book Renewal"

5. Briefly explain about UML Dynamic Modeling.

6. a) What is Pattern?
b) Explain in detail about Generative Pattern and Non Generative Pattern.

7. Explain about Patterns for Assigning Responsibilities.

8. a) Enumerate the steps to reverse engineer a component diagram.
b) What are the common uses of component diagrams?

CODE No.:10MC50103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Supplementary Examinations July - 2015

MIDDLEWARE TECHNOLOGIES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss different computing models.
b) Distinguish between Distributed computing and Client-Server computing.

2. What are the steps in RMI development process? Explain.

3. Explain the architecture of .NET frame work in detail.

4. a) Explain the importance of Type Reflection in C#.
b) What are the services offered by .NET remoting layer?

5. Write a program for multi count.

6. Explain CORBA 2.0 Interface repository.

7. a) Differentiate between Classes and Objects.
b) What is a Trader Service? Explain in detail.

8. What is a JDBC result set interface? Explain.

CODE No.:10MC50108

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Supplementary Examinations July - 2015

CLOUD COMPUTING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What do you mean by virtualization? What are the main objectives of virtualization and elaborate each in detail?

2. a) What is VMware? Explain in brief.
b) Name most popular VMware applications and explain in brief.

3. Explain about Virtualization Software and data storage virtualization.

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 is best suited for grid computing?
b) Is it safe to rely an extensive use of remote computers?

7. Explain Security issues in Cloud Computing.

8. Explain in briefly about Scaling a Cloud Infrastructure.

CODE No.:14MT16302 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Supplementary Examinations October - 2015

WIRELESS NETWORKS

[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 are the pros and cons of having different-size cells for wireless networking?	6 Marks
	b)	Explain about Cellular System Infrastructure.	6 Marks
		(OR)	
2		Given that the number of arrivals of data packet in the receiver follows a Poisson distribution on which arrival rate is 10 arrivals/sec., what is the probability that the number of arrivals is more than 8 but less than 11 during a time of interval of 2 seconds?	12 Marks

UNIT-II

3		Explain the procedure for generating a secret key in wireless networks.	12 Marks
		(OR)	
4		Define the following	
		a) Doppler effect	4 Marks
		b) Fast Fading	4 Marks
		c) Free Space Propagation	4 Marks

UNIT-III

5		Explain about various access mechanisms.	12 Marks
		(OR)	
6		What is a channel and explain how to capture wireless traffic in specific?	12 Marks

UNIT-IV

7	a)	Explain the characteristics of MANET.	6 Marks
	b)	What are the design issues in sensor networks?	6 Marks
		(OR)	
8		What is the physical layer differences identified between the wireless PANS and MANS?	12 Marks

UNIT-V

9	a)	Explain about HomeRF.	6 Marks
	b)	Explain about Wireless Metropolitan Area Networks using WiMAX and Mesh Network.	6 Marks
		(OR)	
10	a)	Can you apply different ad hoc network routing protocols to a scatternet? Explain clearly with suitable examples.	6 Marks
	b)	Compare HyperLAN 2 and Bluetooth.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

RESEARCH METHODOLOGY

[Computer Science, Electrical Power Systems, Software Engineering, Digital Electronics and Communication Systems, VLSI, Communication Systems, 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)	Discuss the objectives of Research	6 Marks
	b)	Explain the criteria for good research	6 Marks
		(OR)	
2	a)	Describe the various Research Approaches.	8 Marks
	b)	Explain the definition of Research.	4 Marks

UNIT-II

3	a)	Explain the techniques involved in defining the Research Problem.	6 Marks
	b)	Discuss the contents of Research Design.	6 Marks
		(OR)	
4	a)	Discuss the criteria for selecting a Research Problem.	6 Marks
	b)	Explain the exploratory Research Design.	6 Marks

UNIT-III

5	a)	Discuss the types of primary data.	6 Marks
	b)	Explain the types of data presentation.	6 Marks
		(OR)	
6	a)	Describe the basic concepts of testing of hypothesis.	6 Marks
	b)	Explain the various forms of graphical representation of data.	6 Marks

UNIT-IV

7	a)	Write short notes on skewness of data set.	4 Marks
	b)	Calculate the mean and standard deviation for the following:	8 Marks

Size of item	6	7	8	9	10	11	12
Frequency	3	6	9	13	8	5	4

(OR)

8	a)	Explain the normal distribution with an example.	6 Marks
	b)	Write short notes on Chi-square as a test of goodness of fit.	6 Marks

UNIT-V

9	a)	Explain how to carry out Literature Survey and how is should be recorded in thesis.	6 Marks
	b)	Discuss the precautions to be taken during interpretation.	6 Marks
		(OR)	
10	a)	Explain the various components in the report layout.	6 Marks
	b)	Discuss the types of reports.	6 Marks

CODE No.:14MT10501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

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 are the functions performed by the layers of the TCP/IP model?	6 Marks
	b)	Explain the devices Switch and Router in the context of data networks.	6 Marks
		(OR)	
2	a)	What is the format of cell in ATM? How fixed size data units results in improvement in performance of the network?	6 Marks
	b)	What are the performance related technical parameters of the Internet?	6 Marks

UNIT-II

3		Design a CRC process unit for the following two standard generators of computer networking: a) CRC-12; b)CRC-16	12 Marks
		(OR)	
4		We want to design a coaxial LAN for 12 offices arranged on three similar floors, each floor having two rows with 2 offices and the rows separated by a hallway. Each office is 5 m **x** 5 m with a height of 3 m. The LAN center is in the center of the ground floor beneath the three office floors. Assume that each office requires two IP telephone lines and retrieves two Web pages per minute at the average rate of 22 K per page. a) Estimate the distance from each office to the LAN center. b) Estimate the required available bit rate for the LAN.	12 Marks

UNIT-III

5	a)	How SMTP, FTP and HTTP transfer the messages from one point to another?	6 Marks
	b)	Explain TCP Congestion control in detail.	6 Marks
		(OR)	
6	a)	Explain about additive increase and multiplicative decrease control mechanism.	6 Marks
	b)	Write a short note on DNS.	6 Marks

UNIT-IV

7		Explain the working of Mobile IP.	12 Marks
		(OR)	
8	a)	How optical networks are different from the present networks? What are the similarities with the existing networks?	6 Marks
	b)	What is Wavelength division multiplexing?	6 Marks

UNIT-V

9		Explain the working of AODV routing algorithm.	12 Marks
		(OR)	
10		What are overlay networks?	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

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)	With a neat sketch discuss the three-tier architecture of a DBMS.	6 Marks
	b)	Construct an E-R diagram for a car insurance company whose customers own one or more cars each. Each car has associated with it zero or any number of recorded accidents. State any assumptions you make.	6 Marks
		(OR)	
2	a)	What is aggregation in an ER model? Develop an ER diagram using aggregation that captures the following information: Employees work for projects. An employee working for a particular project uses various machinery. Assume necessary attributes. State any assumptions if considered. Discuss about the designed diagram.	6 Marks
	b)	What is referential integrity? Give relevant examples.	6 Marks

UNIT-II

3	a)	List and explain the major problems with processing of update operations expressed in terms of views.	6 Marks
	b)	Discuss about the facilities provided by SQL for recovery of data.	6 Marks
		(OR)	
4		What are the relational algebra operations supported in SQL? Write the SQL statement for each operation.	12 Marks

UNIT-III

5	a)	Consider the following relation: R(A,B,C,D,E) The primary key of the relation is AB. The following functional dependencies hold: A→ C B→ D AB→ E Is this in second normal form? Explain.	6 Marks
	b)	What are the factors to be taken into account when choosing a RAID level? Describe them.	6 Marks
		(OR)	
6		Describe the different types of file organization? Explain using a sketch of each of them with their advantages and disadvantages.	12 Marks

UNIT-IV

7	a)	Explain in detail about restart recovery.	6 Marks
	b)	Define analysis pass, redo pass and undo pass in Recovery algorithm.	6 Marks
		(OR)	
8		Explain about:	
	a)	Lock granularity	6 Marks
	b)	Lock Types & Phase locking	6 Marks

UNIT-V

9	a)	Describe the evolution of distributed DBMS from centralized DBMS.	6 Marks
	b)	What are the types of transparencies that a distributed database must support? Why?	6 Marks
		(OR)	
10	a)	What are the problems encountered in DBMS while considering concurrency control and recovery?	6 Marks
	b)	What is mixed fragmentation? Give an example.	6 Marks

CODE No.:14MT10503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

ADVANCED SOFTWARE ENGINEERING

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Name various software lifecycle models and explain the differences between incremental development and rapid application development method.	6 Marks
	b)	i) Explain iterative waterfall and rational unified process model for software life cycle and discuss various activities in each phase. ii) Explain how the agile process model with a suitable real time application.	6 Marks
		(OR)	
2	a)	What are the principles of software engineering practice? Discuss.	6 Marks
	b)	Discuss the software myths.	6 Marks

UNIT-II

3	a)	What are the basic guidelines for conducting a collaborative requirements gathering meeting?	6 Marks
	b)	Differentiate between functional and non-functional requirements with suitable examples.	6 Marks
		(OR)	
4	a)	What information is produced as a consequence of requirements gathering?	6 Marks
	b)	Describe the analysis pattern in your own words.	6 Marks

UNIT-III

5	a)	What are the design principles used to guide the designer during component level design?	6 Marks
	b)	Explain different types of coupling with suitable examples.	6 Marks
		(OR)	
6	a)	Differentiate between design patterns and frameworks. Provide examples for each.	6 Marks
	b)	Explain different types of cohesion with suitable examples.	6 Marks

UNIT-IV

7	a)	With suitable test cases, explain the various white box approaches. State the cyclomatic complexity measure used in it.	6 Marks
	b)	What role does user/client play in the development of test plan for a project? Should they be present at any of the test plan reviews? Justify your answer.	6 Marks
		(OR)	
8	a)	Discuss the W5HH principle.	6 Marks
	b)	Explain the size oriented metrics and function oriented metrics in detail.	6 Marks

UNIT-V

9		Write short notes on the following : i) Reuse landscape. ii) Reviews and inspections.	12 Marks
		(OR)	
10		Write short notes on the following : i) Reverse engineering. ii) Restructuring.	12 Marks

CODE No.:14MT10504 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

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	a)	Explain the process of converting Infix to Postfix expression using a stack.	6 Marks
	b)	Write an algorithm for the queue operations.	6 Marks
		(OR)	
2	a)	Write an algorithm to delete a node for a single linked list.	6 Marks
	b)	Illustrate few applications of Queue.	6 Marks

UNIT-II

3	a)	You are given the elements: 5, 4, 3, 2, 1 You are requested to search 3. How do you search it using linear search algorithm. Explain briefly.	6 Marks
	b)	Illustrate radix sort on the numbers: 452, 615, 26, 125, 137, 269, 788, 961, 302	6 Marks
		(OR)	
4	a)	Explain different types of tree traversals.	6 Marks
	b)	Compare spanning tree with minimum spanning tree.	6 Marks

UNIT-III

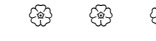
5	a)	Construct AVL tree with the given: 50, 25, 10, 5, 7, 3, 30, 20, 8, 15.	6 Marks
	b)	Explain Single Rotation of AVL tree with Algorithm.	6 Marks
		(OR)	
6	a)	Explain the need of B-tree with its advantages.	4 Marks
	b)	Write Algorithms for following operations into Ab-tree i) Insertion of an element ii) Searching of an element	8 Marks

UNIT-IV

7	a)	Analyze the time complexity for the binary search of an element using divide and conquer methodology.	6 Marks
	b)	Explain single source shortest path using Greedy method.	6 Marks
		(OR)	
8		Compare Prim's and Kruskal's algorithms with examples.	12 Marks

UNIT-V

9	a)	What is the advantage of dynamic programming method over divide and conquer method.	4 Marks
	b)	What is chromatic number of a graph? Give a backtracking algorithm to find the minimum number of colors required to properly color a graph.	8 Marks
		(OR)	
10		Give a branch and bound algorithm to solve 0/1 knapsack problem. Explain working of your algorithm with a suitable example.	12 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

DISCRETE STRUCTURES AND GRAPH THEORY

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain Conjunction and Disjunction with example and its Truth table.	6 Marks
	b)	Obtain PDNF of $P \rightarrow ((P \rightarrow Q) \wedge \neg (\neg Q \vee \neg P))$.	6 Marks
		(OR)	
2	a)	Without using truth table, show that $Q \vee (P \wedge 7Q) \vee (7P \wedge 7Q)$ is a tautology.	6 Marks
	b)	Show that $P \vee Q$ follows from P using automatic theorem proving.	6 Marks

UNIT-II

3	a)	Define terms: i) lattice ii) Join – semi lattice iii) Meet – semi lattice	3 Marks
	b)	Draw the Hasse – diagram for the post **$[D_{12};/]$.** Where **'/'** is the divisibility relation. Determine this poset is lattice or not.	9 Marks
		(OR)	
4	a)	Explain general properties on monoids with examples.	6 Marks
	b)	Discuss different binary relation properties with examples.	6 Marks

UNIT-III

5	a)	Write the recurrence relation for towers of Hanoi problem.	6 Marks
	b)	Find recurrence relation for number of subsets of an n-element set.	6 Marks
		(OR)	
6	a)	Explain about the Binomial Coefficients.	6 Marks
	b)	Find a generating function to count the number of integral solutions to $e_1 + e_2 + e_3 = 10$ if for each i, $o \leq e_i$.	6 Marks

UNIT-IV

7	a)	Discuss the differences between Euler Circuit and Hamiltonian Circuit with suitable example.	4 Marks
	b)	Show that A complete graph K_n is planar iff $n \leq 4$. (Using Euler's).	8 Marks
		(OR)	
8	a)	Prove that every simple planar graph is 5 - colorable.	6 Marks
	b)	Write short notes on: i) Hamiltonian Graph ii) Hamiltonian Path	6 Marks

UNIT-V

9	a)	Explain with example how spanning trees are important for data networking.	6 Marks
	b)	Explain Prim's algorithm to find minimum spanning tree from a graph with example.	6 Marks
		(OR)	
10	a)	Explain different properties of Trees with example.	6 Marks
	b)	What is a spanning tree? Explain any one method for finding out spanning tree of a given graph with an example.	6 Marks

CODE No.:14MT10509 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

SOFTWARE PROJECT MANAGEMENT

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail about the principles of conventional software engineering.	6 Marks
	b)	Discuss in detail about the advantages and disadvantages of commercial components versus custom software.	6 Marks
		(OR)	
2	a)	How to achieve ROI for software system?	6 Marks
	b)	What constitute a good software cost estimate?	6 Marks

UNIT-II

3	a)	Explain the important trends in improving the software processes.	6 Marks
	b)	Explain how automation improves software economics.	6 Marks
		(OR)	
4	a)	Explain how do you achieve required quality in software development.	6 Marks
	b)	Explain how object-oriented method works achieving reusable components for effective cost estimation.	6 Marks

UNIT-III

5		Discuss in detail about the different life cycle phases of the software manufacturing process.	12 Marks
		(OR)	
6	a)	Briefly present an overview of the life-cycle evolution of the artifacts set.	6 Marks
	b)	Explain how do you evaluate requirement artifact set.	6 Marks

UNIT-IV

7	a)	Define workflow. Explain the concept of iteration workflows.	6 Marks
	b)	Summarize some key differences in the process primitives for small and large projects.	6 Marks
		(OR)	
8	a)	Describe in detail about the typical conventional work breakdown structure.	6 Marks
	b)	Give an overview of seven core metrics in managing a modern process.	6 Marks

UNIT-V

9	a)	What is the content of a project plan? Explain different steps used in project organization.	6 Marks
	b)	Explain about process instrumentation.	6 Marks
		(OR)	
10		Write short notes on the following:	
	a)	COCOMO cost estimation model.	4 Marks
	b)	Software project environment.	4 Marks
	c)	Software metric automation.	4 Marks

CODE No.:14MT10701 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

POWER SYSTEM SECURITY AND STATE ESTIMATION

[Electrical Power Systems]

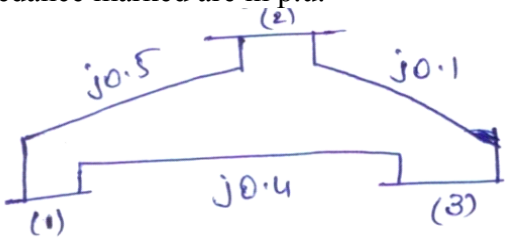
Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Prove that $Y_{BR} = K\, Y_{BUS}\, K^t$ with usual notation. 6 Marks

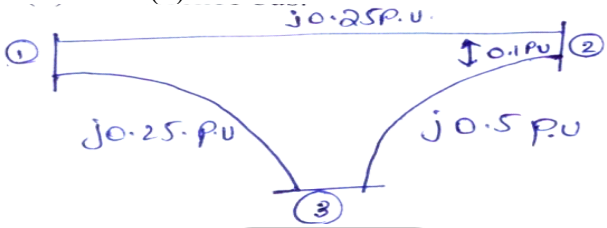
b) For the system show in figure obtained Y_{BUS} by inspection method. Take bus (1) as reference bus. The impedance marked are in p.u. 6 Marks



(OR)

2 a) Derive an expression for adding a link to a network with mutual inductance. 6 Marks

b) Compute the bus impedance matrix for the system shown in figure. By adding element by element. Take bus (2) as reference bus. 6 Marks



UNIT-II

3 a) Explain the Polar co-ordinates method of Newton - Raphson method of load flow solution. 6 Marks

b) Explain about convergence characteristics. 6 Marks

(OR)

4 a) Explain the Gauss- Siedel method of load flow solution. 6 Marks

b) Explain about Fast Decoupled method of load flow solution. 6 Marks

UNIT-III

5 a) Show that for a stationary element, the phase impedance matrix of a component is diagonalised using symmetrical component transformation. 6 Marks

b) A synchronous generator 500KVA, 440V, 0.1pu sub transient reactance is supplying a passive load of 400 kw at 0.8 lagging power factor. Calculate the initial symmetrical rms current for a three phase fault at generator terminals. 6 Marks

(OR)

6 a) Find the impedance matrix for the given network shown in fig. 6 Marks

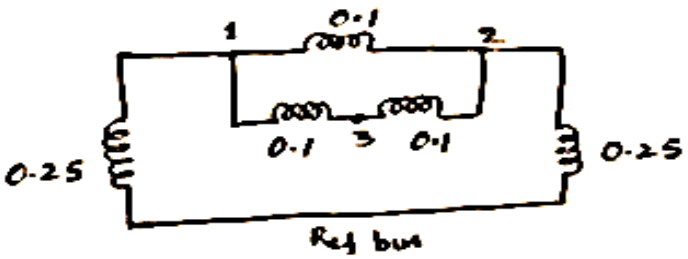


Fig.

b) A station with two generators shown in fig. feeds through transformers a transmission system operating at 132 KV. The far end of the transmission system consisting of 200 km long double circuit line is connected to load from bus B. If a 3-phase fault occurs at bus B, determine the total fault current and fault current supplied by each generator. Select 75 MVA and 11 KV on LV side and 132 KV on h.v. side as base values. 6 Marks

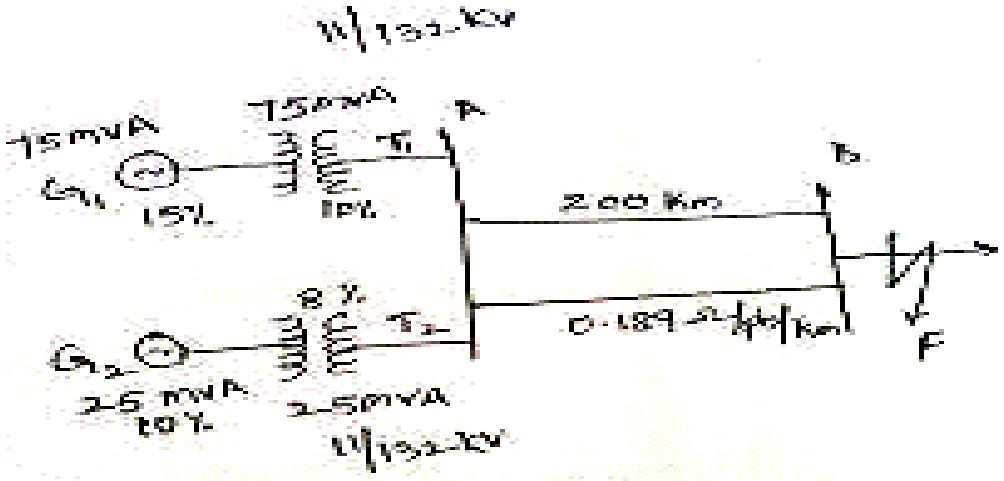


Fig.

UNIT-IV

7 a) List the factors affecting power system security. 6 Marks

b) Explain generator and line outage contingency analysis of power system with flow chart. How is contingency analysis useful in operating the power system efficiently? 6 Marks

(OR)

8 a) Distinguish between security assessment and enhancement. 6 Marks

b) Using the flow chart, explain the AC power flow security analysis with contingency case selection. 6 Marks

UNIT-V

9 a) Discuss the power system state estimation. 6 Marks

b) Compute the two value random variables X by weighted least square estimate method for a given measurement vector Z. $Z = \begin{bmatrix} 0.5 \\ 0.35 \\ 0.49 \end{bmatrix}$; $H = \begin{bmatrix} 1 & 1 \\ 1 & 0 \\ 0 & 1 \end{bmatrix}$ with weighting matrix is $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 0.5 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ 6 Marks

(OR)

10 a) Explain the state estimation using orthogonal decomposition algorithm. 6 Marks

b) Discuss about the method of least squares. 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

STATIC AND DIGITAL PROTECTION OF POWER 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)	Derive the generalized equation for two input phase comparators.	6 Marks
	b)	What are the advantages and disadvantages of numerical relays over the other relays?	6 Marks
		(OR)	
2	a)	Explain in detail the duality between amplitude and phase comparators.	6 Marks
	b)	Discuss the importance of Replica impedance in static relays.	6 Marks

UNIT-II

3	a)	With neat diagram, explain the operation of integrating type phase comparator.	6 Marks
	b)	Draw hybrid comparator and discuss its operation.	6 Marks
		(OR)	
4	a)	With neat diagram, explain the operation of instantaneous amplitude comparator.	6 Marks
	b)	With neat diagram, explain the operation of rectifier phase comparator.	6 Marks

UNIT-III

5	a)	Explain instantaneous over current relays with neat block diagram.	6 Marks
	b)	Write short notes on Static relay schemes.	6 Marks
		(OR)	
6	a)	Mention the significance of static differential relays and also analyze it briefly.	6 Marks
	b)	Explain the operation of time over current relays with neat block diagram.	6 Marks

UNIT-IV

7	a)	Explain the static mho relay using an amplitude comparator.	6 Marks
	b)	What do you understand by out of step tripping? Discuss the operating principle of an out of step tripping relay.	6 Marks
		(OR)	
8	a)	Discuss the effect of arc resistance on the performance of different types of distance relays.	6 Marks
	b)	What do you understand by out of step blocking? Discuss the operating principle of an out of step blocking relay.	6 Marks

UNIT-V

9		Describe the realization of a directional over current relay using microprocessor with block schematic diagram and flowchart.	12 Marks
		(OR)	
10		Explain the measurement of R and X with block diagram and flow chart.	12 Marks

CODE No.:14MT10703 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

ADVANCED POWER SYSTEM STABILITY ANALYSIS

[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 classical model of a multi machine system.	12 Marks
		(OR)	
2		Explain the regulated synchronous machine of a Governor with one time lag and draw the block diagram.	12 Marks

UNIT-II

3		Explain and derive the basic dynamic equations of a balanced symmetrical three - phase synchronous machine and made the essential assumptions.	12 Marks
		(OR)	
4		Explain the analysis of steady- state performance of Unloaded and Loaded generators.	12 Marks

UNIT-III

5	a)	List out the types of excitation systems based on the power sources and explain a functional block diagram of excitation control system.	8 Marks
	b)	Briefly explain IEEE type-I excitation system with block diagram.	4 Marks
		(OR)	
6	a)	Obtain the state space description of the AC-Excitation system with neat block diagram.	7 Marks
	b)	Explain the V-I characteristics of Exciter saturation.	5 Marks

UNIT-IV

7	a)	Explain the effect of excitation on stability.	6 Marks
	b)	List out the objectives of tuning of exciters and explain.	6 Marks
		(OR)	
8	a)	Write the procedure of tuning of AVR parameters.	6 Marks
	b)	What is the significance of Lead compensation filter on stability?	6 Marks

UNIT-V

9		Explain the basic concept of voltage stability by considering transmission lines, generators and loads.	12 Marks
		(OR)	
10	a)	Explain the analysis of voltage instability collapse.	6 Marks
	b)	Explain Zubov's method for review of Liapunov function.	6 Marks

CODE No.:14MT10704 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

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 steady state characteristics of IGBT.	8 Marks
	b)	Discuss the advantages of IGBT over BJTs and MOSFETs.	4 Marks
		(OR)	
2	a)	Explain the switching characteristics of GTO.	8 Marks
	b)	Draw a suitable gate drive circuit for SCR.	4 Marks

UNIT-II

3		A 3-Φ full converter is operated from a 3-Φ, Y-connected, 210 V, 60 Hz supply and load resistance R = 12 Ω. If it is required to obtain an average output voltage of 50% of the maximum possible output voltage, calculate: (i) the delay angle (ii) the RMS and average output currents (iii) the average and RMS thyristor currents (iv) the rectification efficiency (v) the TUF (vi)the input power factor.	12 Marks
		(OR)	
4	a)	Explain the operation of 3-Φ dual converter feeding highly inductive load for a Delay angle of 45°.	8 Marks
	b)	The 3-Φ full converter has a load of L = 1.5 mH, R = 2.5 Ω and E = 10 V. The line to line input voltage is V_{ab} = 208 V (RMS), 60 Hz. The delay angle $\alpha = 60°$. Determine (i) RMS output current (ii) average output current.	4 Marks

UNIT-III

5	a)	Explain the operation of 3-Φ full wave bidirectional AC voltage controller feeding Y-connected resistive load.	8 Marks
	b)	A 1-Φ full wave AC voltage controller supplies an R-L load. The input RMS voltage is 120 V, 60 Hz, the load is such that L=6.5 mH and R = 2.5 Ω. the delay angles of thyristors are equal $\alpha 1 = \alpha 2 = \alpha = 90°$. Determine (i) conduction angle of Thyristor T1 (ii) the RMS output voltage.	4 Marks
		(OR)	
6	a)	Explain the operation of 3-Φ to 1-Φ cyclo converter feeding R-load.	6 Marks
	b)	The input to the midpoint cyclo converter with 4 SCR's is 220 V (rms), 60 Hz., the load resistance is 15 Ω and load inductance is 60 mH. If the converters are operated as semi converters such that $0 \le \alpha \le \pi$ and the delay angle is $2\pi/3$. Determine (i) the RMS value of output voltage (ii) the input PF.	6 Marks

UNIT-IV

7	a)	Explain the operation of Boost regulator.	8 Marks
	b)	Compare various switch mode regulators.	4 Marks
		(OR)	
8	a)	Explain the operation of M-type ZCS resonant converter.	8 Marks
	b)	Explain the concept of ZCS and ZVS resonant converters.	4 Marks

UNIT-V

9	a)	How a multilevel converter can be used for reactive power compensation? Explain.	6 Marks
	b)	Explain the principle of operation of flying capacitor multi level inverter.	6 Marks
		(OR)	
10	a)	What is the principle of operation of cascaded multi level inverter? Also mention its advantages and disadvantages.	8 Marks
	b)	What is the need for PWM techniques in inverters? Also give the comparison of PWM techniques in 3-Φ inverters.	4 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

ADVANCED CONTROL SYSTEMS

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the significance of an observable system. 6 Marks

b) Determine the controllability and observability of the system given as 6 Marks

$A = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 0 & -2 & -3 \end{bmatrix}$; $B = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$; $C = \begin{bmatrix} 10 & 0 & 0 \end{bmatrix}$.

(OR)

2 The system is described as $G(S) = \dfrac{10}{S(S+1)}$; construct the state model which is controllable but not observable. 12 Marks

UNIT-II

3 a) What are the properties of non-linear system? Give examples. 6 Marks

b) Explain the Isocline method of phase plane analysis. 6 Marks

(OR)

4 a) Determine the singular points: $\ddot{y} + 3\dot{y} + 2y = 0$. 6 Marks

b) Derive the describing function of a Hysteresis non-linearity. 6 Marks

UNIT-III

5 a) Discuss Stability in the sense of Lyapunov. 6 Marks

b) Given a linear time invariant autonomous system, how do you decide whether the system is globally asymptotically stable? 6 Marks

(OR)

6 a) Discuss Stability analysis using Variable gradient method. 6 Marks

b) Explain the concept of Definiteness. 6 Marks

UNIT-IV

7 Explain the state regulator problem by giving a suitable example. 12 Marks

(OR)

8 Consider the system, $\dot{x} = Ax + Bu;\ y = Cx + Du.$ Where 12 Marks

$A = \begin{bmatrix} -2 & -1 \\ 1 & 0 \end{bmatrix}$; $B = \begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}$; $C = \begin{bmatrix} 0 & 1 \end{bmatrix}$; $D = \begin{bmatrix} 2 & 0 \end{bmatrix}$. Design a full order state observer. So that the estimation error will delay in less than 4 sec.

UNIT-V

9 a) Discuss the application of Euler-Lagrange equation and derive the equation. 6 Marks

b) State and explain the principle of optimality. 6 Marks

(OR)

10 a) What is a Hamiltonian? Formulate the optimal control problem in terms of Hamiltonian. 6 Marks

b) Discuss control variable inequality constraints. 6 Marks

CODE No.:14MT10707 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC14) Regular Examinations April - 2015

REACTIVE POWER COMPENSATION AND MANAGEMENT

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is load compensation and mention three main objectives of load compensation.	3 Marks
	b)	Is purely reactive compensator maintaining both constant voltage and unity power factor at the same time? Justify your answer.	3 Marks
	c)	Derive the approximate formula for the voltage regulation of a transmission line.	6 Marks
		(OR)	
2	a)	Mention the causes of variation in magnitude of voltage at the load buses and also write the effect of low voltage and high voltage on the performance of tube lights.	3 Marks
	b)	Distinguish between ideal and practical compensators.	3 Marks
	c)	Explain in detail about the role of an ideal load compensator in case of three phase unbalanced loads.	6 Marks

UNIT-II

3	a)	Show that the midpoint voltage is related to the reactive power requirement of the symmetrical line.	6 Marks
	b)	With the aid of a neat figure, explain the characteristics of time periods of voltage of a power system network for any disturbance.	6 Marks
		(OR)	
4	a)	Distinguish between passive shunt compensation and active shunt compensation.	3 Marks
	b)	What do you mean by a synchronous condenser and draw its equivalent circuit for (i) steady state and (ii) transient conditions?	3 Marks
	c)	Draw typical fundamental voltage/current characteristic of the TCR compensator and justify your answer with the concern equation.	6 Marks

UNIT-III

5	a)	Define the term reactive power management and mention different categories of reactive power management.	3 Marks
	b)	Name one of the major tool used for a reactive power dispatching strategy in the operation of a power system network and with the help of an algorithm, explain one of the solution technique.	9 Marks
		(OR)	
6	a)	Mention any four power quality issues and draw the corresponding voltage wave forms.	3 Marks
	b)	Define voltage distortion factor and write its importance.	3 Marks
	c)	Explain the effect of harmonics of power systems on the nearby telephone lines.	6 Marks

UNIT-IV

7	a)	Explain different loss reduction methods in distribution system.	6 Marks
	b)	Write the procedure to place the optimal location of a capacitor in radial distribution network.	6 Marks

(OR)

8	a)	Draw a neat wave form to show the voltage flickering and harmonic voltage.	3 Marks
	b)	What is the effect of harmonic voltages on the performance of a load?	3 Marks
	c)	Discuss the penalties for voltage flickers and harmonic voltage levels.	6 Marks

UNIT-V

9	a)	What are the advantages of using capacitors?	6 Marks
	b)	Explain about reactive power requirements for a traction system.	6 Marks

(OR)

10	a)	Explain how the power factor of an arc furnace is improved.	6 Marks
	b)	Discuss about the reactive power requirements of a textile industry	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

SOFTWARE DEVELOPMENT METHODOLOGIES

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is Dynamic System Development Method (DSDM)? Explain in detail.	6 Marks
	b)	Describe in detail about Lean Software Development Method (LSDM).	6 Marks
		(OR)	
2	a)	What do you mean by structured analysis? Explain in detail about the tools used for analysis of software system.	8 Marks
	b)	Demonstrate in detail about software engineering knowledge -core principles.	4 Marks

UNIT-II

3	a)	Explain about the collaborative requirement gathering.	6 Marks
	b)	Explain about building the analysis model.	6 Marks
		(OR)	
4	a)	Develop a complete use-case for using your charge card for a meal at a restaurant.	6 Marks
	b)	What are objectives and rules of thumb of requirement analysis?	6 Marks

UNIT-III

5		Explain about design model in software engineering.	12 Marks
		(OR)	
6	a)	Explain about level of abstraction in software design.	6 Marks
	b)	Discuss the importance of data abstraction in the software design process.	6 Marks

UNIT-IV

7		Explain different structural coding techniques.	12 Marks
		(OR)	
8	a)	Explain concurrency mechanisms with relevant examples.	6 Marks
	b)	Explain about role of concurrency mechanism in programming language.	6 Marks

UNIT-V

9	a)	Explain about software testing strategy for object oriented architectures.	6 Marks
	b)	Explain about validation testing.	6 Marks
		(OR)	
10	a)	Unit testing for highly coupled modules is difficult. Justify.	6 Marks
	b)	Explain different debugging strategies.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC14) Regular Examinations April - 2015

SOFTWARE PROCESS AND PROJECT MANAGEMENT

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the Software Maturity Framework.	6 Marks
	b)	Describe the principles of software process change. .	6 Marks
		(OR)	
2		"Process assessment helps software organizations improve themselves by identifying their critical problems and establishing improvement priorities". Explain.	12 Marks

UNIT-II

3	a)	Discuss in detail risk management.	6 Marks
	b)	Defining the software process.	6 Marks
		(OR)	
4	a)	Discuss in detail the calculating the z- values.	6 Marks
	b)	Explain about Defect Prevention.	6 Marks

UNIT-III

5	a)	Explain the principles of conventional software engineering.	6 Marks
	b)	Explain the artifacts of the process.	6 Marks
		(OR)	
6	a)	Explain in detail about check points of the process.	6 Marks
	b)	Define Software Economics. Also explain Pragmatic software cost estimation.	6 Marks

UNIT-IV

7		Write short notes on the following:	
	a)	Life cycle phases with emphasis on the inception phase	3 Marks
	b)	Artifacts sets and Engineering artifacts	3 Marks
	c)	Workflows of the process	3 Marks
	d)	Checkpoints of the Process	3 Marks
		(OR)	
8	a)	Give an account on how the modern Software management process will incorporate many conventional principles but will also transition to some substantially new approaches.	6 Marks
	b)	Explain how Software Economics can be Improved by improving team effectiveness and improving the software processes.	6 Marks

UNIT-V

9		Write short notes on the following :	
	a)	Next - Generation software economics	6 Marks
	b)	Modern process transitions	6 Marks
		(OR)	
10	a)	Explain the next generation cost models.	6 Marks
	b)	Discuss the Process automation.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

SOFTWARE REQUIREMENTS AND ESTIMATION

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the good practices adopted for software requirements engineering.	12 Marks
		(OR)	
2		Define software requirements. Discuss how requirements, development and managements are done.	12 Marks

UNIT-II

3		What is meant by requirements modeling? Discuss about state transition and class diagrams with suitable examples.	12 Marks
		(OR)	
4		Discuss clearly the software requirements change control process.	12 Marks

UNIT-III

5		Explain key project factors that influence software estimation.	12 Marks
		(OR)	
6	a)	Explain the concept of Full function points with an example.	6 Marks
	b)	Discuss LOC estimation.	6 Marks

UNIT-IV

7		Discuss various approaches to efforts and schedule estimation.	12 Marks
		(OR)	
8	a)	Explain the concept of COCOMO II.	6 Marks
	b)	Discuss about Algorithmic models.	6 Marks

UNIT-V

9		List and explain the benefits in using requirements Management Tools.	12 Marks
		(OR)	
10		Draw the figure to show how the requirements Management Tools integrate with other kinds of software tools.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC14) Regular Examinations April - 2015

WEB TECHNOLOGIES

[Software Engineering]

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 load multimedia files and play them by click of a mouse.	6 Marks
	b)	Explain about Images, colors and canvas in HTML pages.	6 Marks
		(OR)	
2	a)	Explain about links and URLs in HTML.	6 Marks
	b)	Explain about CSS selectors with syntax and example.	6 Marks

UNIT-II

3	a)	Mention different events in JavaScript with example.	6 Marks
	b)	Write a short note on String, RegExp and Math Objects.	6 Marks
		(OR)	
4	a)	Explain different types of selectors in JQuery.	6 Marks
	b)	Design a JQuery to illustrate hide/show methods.	6 Marks

UNIT-III

5	a)	Explain about different control structures in PHP with syntax and example.	8 Marks
	b)	Write a PHP code to reverse a given string.	4 Marks
		(OR)	
6	a)	Write a PHP code to sort list of array elements in dictionary order.	6 Marks
	b)	Explain about passing arguments by value and by reference with an example.	6 Marks

UNIT-IV

7	a)	Mention the steps to authenticate user against MySQL database.	4 Marks
	b)	Design a PHP web page to send and retrieve user personal details using MySQL database.	8 Marks
		(OR)	
8	a)	Explain about prepared statements in MySQL with an example using php.	6 Marks
	b)	Write a query to retrieve number of rows in a table in MySQL database.	6 Marks

UNIT-V

9	a)	How to you create the XMLHttpRequest object? What is the use of it?	6 Marks
	b)	How do you submit a form or a part of a form without a page refresh using AJAX?	6 Marks
		(OR)	
10	a)	Give an illustration how do you handle the back and forward buttons.	6 Marks
	b)	How do you validate a field using AJAX and PHP?	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

CLOUD COMPUTING

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List and explain the objectives of Virtualization.	6 Marks
	b)	List and explain the benefits of Virtualized technology.	6 Marks
		(OR)	
2		Explain the following Virtualization technologies: i) Ubuntu ii) Microsoft Hyper-V	12 Marks

UNIT-II

3	a)	What is Cloud Computing? List advantages and disadvantages of Cloud Computing.	6 Marks
	b)	Explain the following cloud types. i) Service Model ii) Deployment model	6 Marks
		(OR)	
4		With the help of a diagram, explain the cloud architecture.	12 Marks

UNIT-III

5		Explain the following with respect to cloud. i) Infrastructure as a Service ii) Platform as a Service	12 Marks
		(OR)	
6		Describe the Cloud Capacity Planning with examples.	12 Marks

UNIT-IV

7		Analyze in detail about the Amazon Web Services.	12 Marks
		(OR)	
8		Explain the SaaS implementation based on SOA with a neat diagram.	12 Marks

UNIT-V

9		Apply MS-Azure Cloud to develop a website consisting of Project and Employee details.	12 Marks
		(OR)	
10		List and explain the various factors that influence Cloud Security and preventive measures.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

COMPUTER ARCHITECTURES

[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)	Make a comparison between cost and price.	6 Marks
	b)	Explain the advantages of parallelism. With an example, explain how parallelism improves the performance.	6 Marks
		(OR)	
2.	a)	How to measure the performance of a computer? Explain.	6 Marks
	b)	State and explain CPU performance equation.	6 Marks

UNIT-II

3.	a)	What is Branch Prediction? Explain the concepts of Static and Dynamic Branch Predictions.	8 Marks
	b)	Discuss the Limitations of ILP.	4 Marks
		(OR)	
4.	a)	With an example, prove the Branch Costs are reduced with prediction.	4 Marks
	b)	Describe the advanced techniques for Instruction Delivery and Speculation.	8 Marks

UNIT-III

5.	a)	Briefly explain the distributed shared memory architecture.	4 Marks
	b)	Illustrate implementation of locks using the concept of coherence with example.	8 Marks
		(OR)	
6.	a)	Discuss the concept of synchronization and also its role in the working of an operating system.	6 Marks
	b)	Compare between snoop based coherence protocol and directory protocol.	6 Marks

UNIT-IV

7		Enumerate the various optimization of cache performance.	12 Marks
		(OR)	
8	a)	Suppose you measured a new DDR3 DIMM to transfer at 16000MB/Sec. What is the clock rate of that DIMM?	4 Marks
	b)	Explain with neat illustration of memory hierarchy going from virtual address to L2 Cache access.	8 Marks

UNIT-V

9.	a)	Draw and explain the different settings of the 2**x**2 switching element.	4 Marks
	b)	State different types of Multi stage Interconnection Network (MINs) based on Blockage criterion. Explain any one of them in detail.	8 Marks
		(OR)	
10.		Explain the following: i) Banyan networks ii) Shuffle exchange networks iii) Omega networks.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

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 band pass signal of frequency response X(f) is passed through a band pass system whose frequency response is H(f). Give the response of the system both in frequency domain and in time domain. Draw the low pass equivalent circuit of the system and give the suitable expressions. 12 Marks

(OR)

2 Explain the geometric interpretation of signals in general with suitable sketches and expressions and give the geometric representation of three signals in a signal space formed by two ortho-normal basis functions. 12 Marks

UNIT-II

3 What are the important factors that influence the choice of a digital modulation scheme for a given application? Explain them in detail. 12 Marks

(OR)

4 A binary stream of {101001011} data is to be transmitted through an 8-PSK system. Give the procedure to generate the transmitted signal from the system with suitable sketches. Use a cosine signal as a carrier with at least two cycles in a bit period. Give the performance indices to the system given. How much is the spectral efficiency achieved with this system? 12 Marks

UNIT-III

5 a) Derive the expression for the probability of error P_e in respect of QPSK modulation scheme. 6 Marks

b) Binary data are transmitted over a microwave link at the rate of 10^6 bits/s and the power spectral density of noise at the receiver input is 10^{-10} W/Hz. Find the average carrier power required to maintain an average probability of error $P_e \leq 10^{-4}$ for (i) coherent PSK and (ii) DPSK. 6 Marks

(OR)

6 a) Deduce the expression for optimum SNR at the output of a matched filter under AWGN conditions. Also prove that a correlator output will be same as that of matched filter if the input signal is a rectangular pulse. 6 Marks

b) The values of E_b / N_0 required to realize an average probability of error $P_e \leq 10^{-4}$ using coherent BPSK and coherent BFSK systems are equal to 7.2 and 13.5 respectively. Using the approximation $erfc(u) \approx \frac{1}{u\sqrt{\pi}} \exp(-u^2)$ determine the separation in the values of E_b / N_0 for $P_e \leq 10^{-4}$, using coherent BFSK and non coherent BFSK. 6 Marks

UNIT-IV

7 a) Discuss about model of spread spectrum digital communication system. 6 Marks

b) Explain about synchronization and tracking of frequency HOP spread spectrum signals. 6 Marks

(OR)

8 a) With the help of block diagram, explain the principal and working of fast frequency hopping. 6 Marks

b) Derive an expression for Jamming Margin. 6 Marks

UNIT-V

9 Write the following:

a) Tau-Dither loop. 6 Marks

b) Delay locked loop. 6 Marks

(OR)

10 Write the following:

a) Matched filters for Frequency - hopped signals. 6 Marks

b) Coherent carrier tracking. 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC14) Regular Examinations April - 2015

DIGITAL SYSTEM DESIGN

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

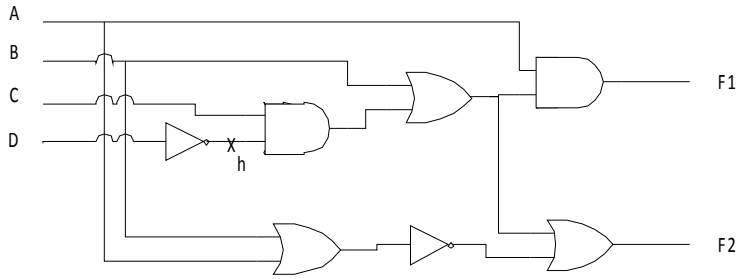
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw and explain ASM chart to implement the logic circuit for a 1001 sequence detector.	6 Marks
	b)	With a good example, specify the rules you follow while in state assignment.	6 Marks
		(OR)	
2	a)	Design a four bit binary to Gray Code converter using PROM.	6 Marks
	b)	What do you mean by Iterative circuit? Explain with good example.	6 Marks

UNIT-II

3	a)	What is the significance of Kohavi Algorithm? Explain how it detects multiple faults in a two-level network.	6 Marks
	b)	Explain path sensitization method. Estimate path sensitization in AND -OR-AND three level combinational circuit.	6 Marks
		(OR)	
4	a)	Derive a test for a s-a-1 fault on wire **h** using path sensitizing method.	6 Marks



	b)	What is the significance of Signature analysis in BIST circuits?	6 Marks

UNIT-III

5	a)	What is meant by transition check approach in fault diagnosis of sequential circuits?	6 Marks
	b)	Distinguish top down process and bottom up process in fault diagnosis.	6 Marks
		(OR)	
6	a)	Briefly describe fault location techniques with respect to sequential circuits.	6 Marks
	b)	What do you mean by fault dropping? What is the significance of fault dropping in fault diagnosis?	6 Marks

UNIT-IV

7	a)	Describe various types of cross point fault that occur in PLAs.	6 Marks
	b)	What are the major goals of design for testability (DFT)? How to encounter the undetectable faults using DFT schemes?	6 Marks
		(OR)	

8 Draw an all NOR gate circuit and a NOR-NOR PLA implementation of the following four input, three output Boolean function. Find the number of active devices in both types of implementations. 12 Marks

X1	X2	X3	X4	Y1	Y2	Y3
0	2	0	1	1	1	0
1	2	0	1	1	0	1
2	1	1	1	1	1	1
0	0	2	2	0	0	1
1	0	2	2	0	0	1

UNIT-V

9 Design an Asynchronous sequential circuit using SR latch with two inputs A and B and one output y. B is the control input which, when equal to 1, transfers the input A to output y, when B is 0, the output does not change for any change in input. 12 Marks

(OR)

10 a) Explain closed covering condition in asynchronous circuits. Use the suitable implication table to find compatible states for this condition. 6 Marks

b) Explain, how pulse clocked asynchronous sequential circuit is free from all types of hazards. 6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

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 the need for multirate signal processing? Give some examples of multirate digital systems.	6 Marks
	b)	Explain the interpolation process with an example.	6 Marks
		(OR)	
2	a)	Explain the decimation process in detail.	6 Marks
	b)	What are quadrature mirror filter banks?	6 Marks

UNIT-II

3		Compute the autocorrelation and power spectral density of the signal **f(t)= Kcos ($2\pi f_c t + \Theta$).** Where K is a constant and 'Θ' is a random variable which is uniformly distributed over the interval **($-\pi, \pi$).**	12 Marks
		(OR)	
4	a)	State and prove the properties of autocorrelation function.	6 Marks
	b)	Derive the relation between autocorrelation function and power spectral density	6 Marks

UNIT-III

5		Consider a Wiener filtering problem characterized as follows. The correlation matrix **R** of the tap-input vector **u**(n) is $R = \begin{bmatrix} 0.5 & 0.5 \\ 0.5 & 1 \end{bmatrix}$. The cross-correlation vector between the tap-input **u**(n) and the desired response d(n) is **P** =[0.25 0.25]^T i) Evaluate the tap weights of the Wiener filter. ii) What is the minimum mean square error produced by this Wiener filter?	12 Marks
		(OR)	
6		A single weight performance surface has the parameters λ=0.4 and ξ_{min}=0 and w*=1.Write an expression for this performance surface.	12 Marks

UNIT-IV

7		Discuss about gradient search by Newton's method.	12 Marks
		(OR)	
8		Explain the cancellation of echoes in long distance telephone circuits.	12 Marks

UNIT-V

9		Discuss in detail about matrix inverse Lemma.	12 Marks
		(OR)	
10		State the problem of Kalman filtering.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC14) Regular Examinations April - 2015

COMPUTER NETWORKS

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the fields and their use in different frame types of HDLC.	8 Marks
	b)	Give the difference between Connection less and Connection Oriented Services.	4 Marks
		(OR)	
2	a)	Compare and Contrast between ISO/OSI and TCP/IP Model.	6 Marks
	b)	Explain about any two guided transmission media.	6 Marks

UNIT-II

3	a)	For 802.11a, show how the modulation technique and coding rate determine the data rate.	6 Marks
	b)	Discuss the features of Fast Ethernet and Giga Ethernet technologies.	6 Marks
		(OR)	
4	a)	Draw Bluetooth Layers. Explain the role of each layer.	6 Marks
	b)	Distinguish between Unicast, Multicast and Broadcast Transmission.	6 Marks

UNIT-III

5	a)	How does ATM differ from Frame Relay? Explain.	6 Marks
	b)	What is RSVP? Explain.	6 Marks
		(OR)	
6		What are the different types of Connecting Devices used based upon the layer in the Network. Explain.	12 Marks

UNIT-IV

7	a)	Demonstrate Congestion Control in TCP.	6 Marks
	b)	What is DNS? Explain how to implement DNS.	6 Marks
		(OR)	
8	a)	Explain how mails are transferred using SMTP.	6 Marks
	b)	What is IPv6? Explain the structure of IPv6 Datagram.	6 Marks

UNIT-V

9	a)	Write RSA algorithm. Perform encryption and decryption using the RSA algorithm for the data: p=3, q=11, d=7, m=5	8 Marks
	b)	Write about message integrity and message authentication.	4 Marks
		(OR)	
10	a)	Explain the process of signing the digest in a digital signature.	6 Marks
	b)	Give message format of SNMP. List different messages of SNMP and their purposes.	6 Marks

CODE No.:14MT13807 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

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	a)	Discuss about challenges in embedded computing system design.	6 Marks
	b)	Define an embedded system. Differentiate between a general purpose computing system and an embedded system.	6 Marks
		(OR)	
2	a)	Discuss about designing an embedded system on a VLSI chip.	6 Marks
	b)	Discuss small scale, medium scale and sophisticated types of embedded systems.	6 Marks

UNIT-II

3	a)	Explain various performance metrics.	6 Marks
	b)	Discuss real time operating system architecture.	6 Marks
		(OR)	
4	a)	Explain memory maps for Princeton and Harvard architectures.	6 Marks
	b)	Discuss Round Robin with interrupts method of Software architecture.	6 Marks

UNIT-III

5	a)	Compare software programming in Assembly language and in High level languages.	8 Marks
	b)	Explain preprocessor directives.	4 Marks
		(OR)	
6	a)	Discuss about the program elements : (i) Macros (ii) Statements.	6 Marks
	b)	Discuss about the program elements : (i) Data structures (ii) Modifiers.	6 Marks

UNIT-IV

7	a)	Describe in detail the terms : Tasks and Processes.	4 Marks
	b)	Explain preemptive Real - Time Operating System with an example.	8 Marks
		(OR)	
8	a)	Explain various priority based scheduling with neat diagram.	8 Marks
	b)	Discuss non-blocking inter-process communication with suitable examples.	4 Marks

UNIT-V

9	a)	Explain the tool chain with flow diagram necessary for embedded software development.	6 Marks
	b)	Discuss about requirement analysis.	6 Marks
		(OR)	
10	a)	What is CRC? Discuss CRC card methodology with suitable example.	7 Marks
	b)	Justify that poor specifications lead to poor quality code - do aspects of a poorly -constructed specification necessary lead to bad software.	5 Marks

CODE No.:14MT13809 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC14) Regular Examinations April - 2015

LINEAR ALGEBRA

[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) Investigate for consistency of the following equations and if possible find the solution 6 Marks

$4x - 2y + 6z = 8;$ $x + y - 3z = -1;$ $15x - 3y + 9z = 21$

b) Determine the relation between the set of vectors $\begin{bmatrix}3\\6\\2\end{bmatrix}, \begin{bmatrix}-1\\0\\1\end{bmatrix}, \begin{bmatrix}3\\12\\7\end{bmatrix}$. 6 Marks

(OR)

2 a) Solve the following equations by using LU decomposition method 6 Marks

$3x+2y+7z = 4;$ $2x+3y+z = 5;$ $3x+4y+z = 7.$

b) Verify that the given set of vectors $a = \begin{bmatrix}2\\1\\1\end{bmatrix}$, $b = \begin{bmatrix}2\\0\\-1\end{bmatrix}$ and $c = \begin{bmatrix}4\\2\\1\end{bmatrix}$ 6 Marks

are linearly independent or not. If possible, find the relation between them.

UNIT-II

3 a) Let $v_1 = \begin{bmatrix}4\\-3\\7\end{bmatrix}$, $v_2 = \begin{bmatrix}1\\9\\-2\end{bmatrix}$, $v_3 = \begin{bmatrix}7\\11\\6\end{bmatrix}$ and H = Span of $\{v_1, v_2, v_3\}$. Verify that 6 Marks

$4v_1 + 5v_2 - 3v_3 = 0$. Use this transformation to find a basis for H.

b) Find T(u) and T(v) for the transformation defined by $T : R^3 \to R^3$ by 6 Marks

$T(x) = Ax$, where $A = \begin{bmatrix}2&0&0\\0&2&0\\0&0&2\end{bmatrix}, u = \begin{bmatrix}1\\0\\-3\end{bmatrix}$, $v = \begin{bmatrix}5\\-1\\4\end{bmatrix}$.

(OR)

4 a) Let W_1 and W_2 be the subspaces of R^2 with standard operators given by 6 Marks

$W_1 = \left\{\begin{bmatrix}x\\0\end{bmatrix} : x \in R\right\}$ and $W_2 = \left\{\begin{bmatrix}0\\y\end{bmatrix} : y \in R\right\}$ is not a subspace.

b) Define the linear operator. Find the matrix T relative to the standard basis for 6 Marks

R^3 and compute T $\begin{bmatrix}1\\1\\2\end{bmatrix}$ under the operator $T : R^3 \to R^3$ defined as

$$T\left(\begin{bmatrix}x\\y\\z\end{bmatrix}\right) = \begin{bmatrix}x\\-y\\z\end{bmatrix}.$$

UNIT-III

5 a) Show that the set of vectors $U = \{u_1, u_2, u_3\}$ form an orthogonal basis for R^3, and express $\boldsymbol{x}$ as a linear combination of the vectors in U, where $u_1 = \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix}$, $u_2 = \begin{bmatrix} -1 \\ 4 \\ 1 \end{bmatrix}$, $u_3 = \begin{bmatrix} 2 \\ 1 \\ -2 \end{bmatrix}$ and $x = \begin{bmatrix} 8 \\ -4 \\ -3 \end{bmatrix}$. 6 Marks

b) State Cauchy-Schwarz inequality and verify it for $f, g \in P_3(R)$ with inner product defined by $< f, g > = \int_0^1 f(x)g(x)dx$, where $f(x) = 1 - 3x^2$ and $g(x) = x - x^3$. 6 Marks

(OR)

6 a) Find the orthogonal projection of $y = \begin{bmatrix} -1 \\ 4 \\ 3 \end{bmatrix}$ on to span $\{u_1, u_2\}$, where $u_1 = \begin{bmatrix} 1 \\ 1 \\ 0 \end{bmatrix}$, $u_2 = \begin{bmatrix} -1 \\ 1 \\ 0 \end{bmatrix}$. 6 Marks

b) Find an orthonormal basis for R^3 by Gram-Schmidt process using the basis $B = \left\{ \begin{bmatrix} 2 \\ -5 \\ 1 \end{bmatrix}, \begin{bmatrix} 4 \\ -1 \\ 2 \end{bmatrix} \right\}$. 6 Marks

UNIT-IV

7 a) Find the eigen value of A and a basis for each eigen space of the matrix $A = \begin{bmatrix} 5 & 0 \\ 2 & 1 \end{bmatrix}$. 6 Marks

b) Find a formula for A^k, given that $A = PDP^{-1}$, *where* $A = \begin{bmatrix} 7 & 2 \\ -4 & 1 \end{bmatrix}$, $P = \begin{bmatrix} 1 & 1 \\ -1 & -2 \end{bmatrix}$, $D = \begin{bmatrix} 5 & 0 \\ 0 & 3 \end{bmatrix}$. *Also find* A^2. 6 Marks

(OR)

8 a) Find the nature of the quadratic form $x^2 + 2y^2 + z^2 + 4xy + 4yz$. 6 Marks

b) Find a singular value decomposition (SVD) of $A = \begin{bmatrix} 4 & 11 & 14 \\ 8 & 7 & -2 \end{bmatrix}$. 6 Marks

UNIT-V

9 a) Examine whether the signals 1^k, 2^k, $(-2)^k$ form a basis for the solution space of the difference equation $y_{k+3} - y_{k+2} - 4y_{k+1} + 4y_k = 0$. 6 Marks

b) Find the third-order Fourier approximation to the square wave function, $f(t) = 1$ for $0 \le t < \pi$ and $f(t) = -1$ for $\pi \le t < 2\pi$ on the interval $[0, 2\pi]$. 6 Marks

(OR)

10 The electric circuit described by the equation 12 Marks

where i_L is the current through the inductor L and v_C is the voltage drop across the capacitor C. find formulas for i_L and v_C where R=0.5 ohms, C = 2.5 farads, L = 0.5 henry the initial current is 0 amp, and the initial voltage is 12 volts.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC14) Regular Examinations April - 2015

ANALOG IC DESIGN

[VLSI]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Derive transistor transconductance 'gm' for low-Frequency Small-Signal modeling in the Active Region. 6 Marks

b) Derive the low-frequency model parameters for an n-channel transistor that has doping concentrations of $N_D=10^{25}$ electrons/m^3, $N_A=5\times10^{22}$ holes/m^3, $\mu_nC_{ox}=270\mu A/V^2$, W/L=5 μm/0.5 μm, $V_{GS}=0.8V$, $V_{tn}=0.45V$ and $V_{DS} = V_{eff}$. Assume $\Upsilon=0.25\ \sqrt{V}$ and $V_{SB}=0.5V$. What is the new value of r_{ds} if the drain source voltage is increased by 0.5V? 6 Marks

(OR)

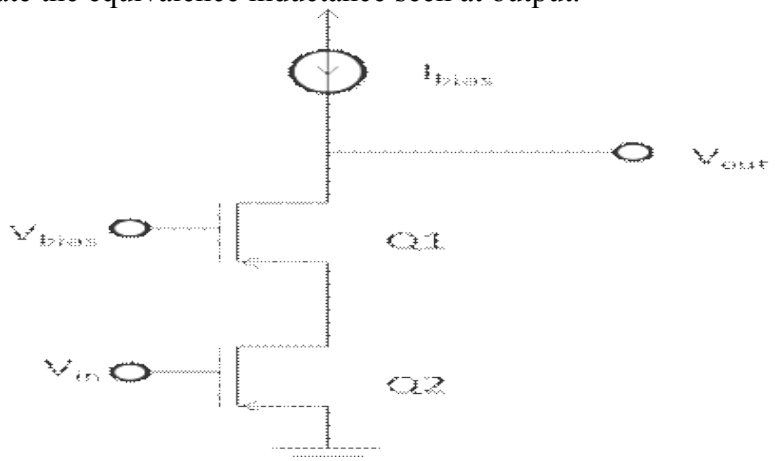
2 a) Explain Body effect in MOS transistor and derive the expression for body effect parameter 'Υ'. 6 Marks

b) Considering the Body effect as "back gate effect" explain intuitively why 'Υ' is directly proportional to $\sqrt{Nsub}$ and inversely proportional to C_{ox}. 6 Marks

UNIT-II

3 a) Explain the effect of high frequency supply noise in differential pairs. 6 Marks

b) A source follower employing an NFET with W/L = 50/0.5 and bias current of 1 mA is driven by a source impedance of 10kΩ. V_{DD} = 3V. Calculate the equivalence inductance seen at output. 6 Marks



(OR)

4 a) Explain Source-Degenerated Current Mirrors and derive the expression for the 'r_{out}'. 6 Marks

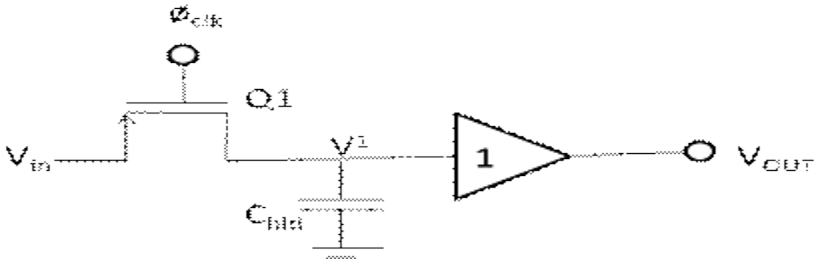
b) Explain high frequency MOS small signal model and obtain frequency response. 6 Marks

UNIT-III

5 a) Explain the operation of Bi-CMOS Sample and Hold Circuit. 6 Marks

b) Assume V_{in} is a 20MHz band limited signal with a 2 V_{p-p} amplitude. A clock signal of 100 MHz having ±2.5V_{p-p} with linear rise and fall time of 1.5ns. What is the maximum uncertainty of the sampling time? 6 Marks

Assume V_{th} is 0.8v.



(OR)

6 a) Explain the operation of bi quad filter and obtain the transfer function. 6 Marks

b) Explain Sub threshold and Mobility degradation equations in simple CMOS circuit. 6 Marks

UNIT-IV

7 a) Explain multiple pole systems and obtain bode plots of loop gain for a two pole system. 6 Marks

b) Construct root locus for following system. Where w=frequency. 6 Marks

$$H(S) = \frac{A}{\left(1+\frac{S}{W_{P1}}\right)\left(1+\frac{S}{W_{P2}}\right)}$$

(OR)

8 a) Explain phase margin and describe closed loop frequency, time frequency response between gain and phase cross over points. 6 Marks

b) Briefly write a note on frequency compensation. How it can be achieved in telescopic op-amp with single ended input? 6 Marks

UNIT-V

9 a) Explain sampling mode and amplification mode in switched capacitors. 6 Marks

b) Derive the output expression for unit gain sampler/Buffer. Achieve the proper generation of clock edges in unity gain sampler. 6 Marks

(OR)

10 a) What is the effect of channel charge injection in pass transistor? Deduce the relation between input and output voltages in terms of channel length (L) and capacitance (C). 6 Marks

b) Explain switched capacitor common mode feedback circuit. 6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC14) Regular Examinations April - 2015

COMPUTATIONAL TECHNIQUES IN MICROELECTRONICS

[VLSI]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the Matrix factorization with example.	6 Marks
	b)	Discuss the Gauss-seidel iteration method.	6 Marks
		(OR)	
2	a)	Explain the method of Successive approximations for scalar equations.	6 Marks
	b)	Discuss the Numerical integration methods for Nonlinear systems.	6 Marks

UNIT-II

3	a)	Explain a technique to obtain a fairly accurate solution for initial value problems.	5 Marks
	b)	Discuss the dynamic methods in applied mechanics.	7 Marks
		(OR)	
4	a)	Write about the finite difference techniques with examples.	6 Marks
	b)	Explain any one of the computational tool for microelectronics.	6 Marks

UNIT-III

5	a)	List the applications of partial differential equations.	5 Marks
	b)	Explain the finite volume method with example.	7 Marks
		(OR)	
6	a)	Explain the method of characteristics for partial differential.	6 Marks
	b)	Write about any one-investigation technique used in engineering.	6 Marks

UNIT-IV

7	a)	Write the Grid generation methods.	6 Marks
	b)	Explain Mesh selection approaches for error estimation.	6 Marks
		(OR)	
8	a)	Explain Refinement algorithms.	7 Marks
	b)	Write the Mesh redistribution methods.	5 Marks

UNIT-V

9	a)	List out the various steps involved in yield estimation algorithms.	6 Marks
	b)	What are the various techniques for device simulation and compare any two of them?	6 Marks
		(OR)	
10	a)	Discuss the process of synthesis of Analog ICs.	7 Marks
	b)	Illustrate the Salient features of layout algorithms.	5 Marks

CODE No.:14MT15703 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

DEVICE MODELLING

[VLSI]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	For the given p-type silicon substrate at T=300^0 K doped to $N_a = 10^{16}$ cm^{-3} the thickness of oxide is 550 A^0 and Gate is Aluminum. Calculate C_{ox} (oxide capacitance) and φ_{fp}	4 Marks
	b)	What is meant by Depletion and Inversion? Explain the concept of strong Inversion for two terminal MOS transistor.	8 Marks
		(OR)	
2	a)	Explain properties of Regions of Inversion for 3 terminal MOS transistor in brief. Write functional name of each term	8 Marks
	b)	Explain pinch off voltage in view of V_{CB} control-voltage .	4 Marks

UNIT-II

3	a)	Explain Transistor regions of operation. And plot its current -voltage characteristics with fixed V_{SB}.	6 Marks
	b)	Illustrate the regions of Inversion in terms of terminal voltage with respect to source substrate and drain substrate voltages.	6 Marks
		(OR)	
4	a)	Draw and explain four terminal p-channel MOS transistor with I_{DS} and V_{DS} characteristics for different V_{SB} values	6 Marks
	b)	Explain the effect of Breakdown mechanism on I_{DS} and V_{DS} characteristics with neat sketches.	6 Marks

UNIT-III

5	a)	Explain Drain to Source current model of strong inversion model under non saturation region.	6 Marks
	b)	Draw a neat sketch of PMOS transistor with i) p^+ gate and ***n*** implant (ii) with n^+ gate and ***P*** Implant.	6 Marks
		(OR)	
6	a)	Explain the hot carrier effects in a region of high longitudinal electric field with necessary diagram.	8 Marks
	b)	What is meant by bulk punch through and surface punch through?	4 Marks

UNIT-IV

7	a)	Explain the quasi static operation of MOS device with illustrations.	6 Marks
	b)	Derive the transit time under different DC conditions.	6 Marks
		(OR)	
8	a)	Give the Non Quasi static analysis of MOS Transistor.	6 Marks
	b)	Give the expression for transit time in weak inversion and velocity saturation.	6 Marks

UNIT-V

9	a)	Derive the low frequency small signal equivalent circuit for the channel of the MOS transistor.	6 Marks
	b)	Explain the five capacitance of the quasi static model of MOS Device.	6 Marks
		(OR)	
10	a)	Give the small signal parameters for the medium frequency small signal model for the intrinsic part.	6 Marks
	b)	Evaluate the effect of capacitances in strong inversion region of quasi static model.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC14) Regular Examinations April - 2015

DIGITAL IC DESIGN

[VLSI]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the dynamic behavior of the CMOS inverter to determine its performance.	7 Marks
	b)	Discuss issues present in the NORA Logic.	5 Marks
		(OR)	
2	a)	Differentiate static and dynamic behavior of CMOS Inverter.	7 Marks
	b)	Implement 3 input NOR gate using static CMOS logic.	5 Marks

UNIT-II

3	a)	Explain about the DRAM cell with relevant diagram.	7 Marks
	b)	Explain about power consumption in CMOS gates.	5 Marks
		(OR)	
4	a)	Explain the concept of low power CMOS design.	7 Marks
	b)	What are the methods of logic effort for transistor sizing?	5 Marks

UNIT-III

5	a)	Consider an NMOS transistor in a 0.6μm process with W/L = 4/2 **λ**. In this process, the gate oxide thickness is 100**Å** and the mobility of electrons is 350cm²/v.sec, the threshold voltage is 0.7V.plot Ids ***vs*** V_{ds} for V_{gs}=0,1,2,3,4, and 5V.	8 Marks
	b)	b) What are the elements for cost to produce an integrated circuit?	4 Marks
		(OR)	
6	a)	Explain VLSI design flow.	6 Marks
	b)	What are the Design methods to implement a CMOS System?	6 Marks

UNIT-IV

7	a)	Explain the different power dissipations in CMOS design.	5 Marks
	b)	Find the rising and falling propagation delays of an AND-OR-INVERT gate using Elmore delay model. Estimate the diffusion capacitance based on a stick diagram of the layout.	7 Marks
		(OR)	
8	a)	Discuss why is ndiff-to- pdiff spacing so large and metal-metal spacing larger than poly-poly spacing.	6 Marks
	b)	Explain the stick diagram for a two three bit **MUX** cell with select input to include the wires in the NAND cells.	6 Marks

UNIT-V

9	a)	Design and explain 4 bit shifter with neat sketch.	6 Marks
	b)	Explain general arrangement of 4 bit arithmetic processor.	6 Marks
		(OR)	
10	a)	Implement arithmetic functions of ALU with adder and explain.	7 Marks
	b)	Explain modified booth's algorithm with example.	5 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC14) Regular Examinations April - 2015

IC FABRICATION

[VLSI]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain Czockralski technique of Crystal Growth.	6 Marks
	b)	Explain any two growth techniques of oxide layer.	6 Marks
		(OR)	
2	a)	Explain about the defects induced due to oxidation.	6 Marks
	b)	Explain Silicon shaping process.	6 Marks

UNIT-II

3		What is X-ray lithography? Describe advantages and problems associated with X-ray lithography.	12 Marks
		(OR)	
4	a)	What is reactive ion etching and describe its damages?	6 Marks
	b)	What is plasma? Draw an equivalent circuit for R.F plasma discharge.	6 Marks

UNIT-III

5	a)	Explain doping in poly silicon.	6 Marks
	b)	Give the properties of poly silicon.	6 Marks
		(OR)	
6	a)	Write about junction path measurement related to diffusion.	8 Marks
	b)	Compare ion-implantation with diffusion.	4 Marks

UNIT-IV

7		What is the purpose of metallization in I.C fabrication? Explain the methods employed for metallization.	12 Marks
		(OR)	
8		What is electron migration? Suggest some solution to get rid of electron migration problem.	12 Marks

UNIT-V

9		Explain scanning electron microscope.	12 Marks
		(OR)	
10		How is packaging is evaluated for V.L.S.I Design? Discuss the types of package design considerations.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

ADVANCED DIGITAL SIGNAL PROCESSING

[Communication Systems]

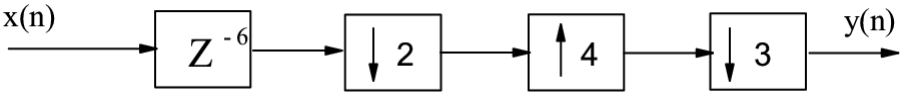
Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Show that the up-sampling factor L and down sampling factor M can be interchanged without effect on the result, if L and M are mutually prime. 6 Marks

b) Develop an expression for the output $y(n)$ as a function of the input $x(n)$ for the Multirate structure shown in figure. 6 Marks



(OR)

2 a) Compute the polyphase components of the given IIR filter for L=2. 6 Marks

$$H(z) = \frac{1 - 2z^{-1}}{1 + 0.5z^{-1}}$$

b) Explain in detail about the PR QMF bank with its pros and cons. 6 Marks

UNIT-II

3 a) Explain clearly the power spectral estimation of finite discussion signals using period a gram techniques bring out the limiting of it. 6 Marks

b) Discuss the implementation of Bartlett Welch methods for improvement of power spectral estimation and compare them. 6 Marks

(OR)

4 a) What is the need for spectral estimation? How can the energy density spectrum be determined? 6 Marks

b) Bring out the drawbacks of Nonparametric spectral estimation methods and also explain the advantages of the same. 6 Marks

UNIT-III

5 a) 1. Determine the mean and the autocorrelation of the sequence $x(n)$, which is the output of an ARMA process described by the difference equation. 6 Marks

$$x(n) = \frac{1}{2}x(n-1) + w(n) - w(n-1)$$

where $w(n)$ is an white noise process with variance σ_w^2

b) Bring out the drawbacks of parametric spectral estimation methods and also explain the advantages of parametric methods. 6 Marks

(OR)

6 Estimate power spectrum using Yule-Walker & Burg Methods. 12 Marks

UNIT-IV

7 a) Adapt index mapping to evolve with Fast DFT algorithms. 6 Marks

b) Develop the index mapping for implementing an N-point DFT $X[k]$ of a length - N sequence $x[n]$ using prime factor algorithm for N=15. 6 Marks

(OR)

8	a)	Draw the flow graph for the Decimation in frequency SRFFT algorithm *N*=16.	6 Marks
	b)	Explain about Chirp Z-Transform and linear filtering using it. How is it different to DFT?	6 Marks

UNIT-V

9	a)	Explain in detail about high resolution narrowband spectral analysis.	6 Marks
	b)	Discuss about design of antialias filter in music system.	6 Marks

(OR)

10		Explain the following applications of digital signal processing	
		i) Digital cellular mobile telephony	6 Marks
		ii) High quality A/D conversion for digital audio.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

LOW VOLTAGE ANALOG CIRCUIT DESIGN

[VLSI]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the supply switch technique in detail to save power.	6 Marks
	b)	Discuss multiple threshold technique.	6 Marks
		(OR)	
2	a)	Explain substrate bias control for suppressing device fluctuations.	6 Marks
	b)	Discuss the trade-off between power and speed of a digital integrated circuit.	6 Marks

UNIT-II

3	a)	Discuss two models for FGMOS.	6 Marks
	b)	Identify the criteria for minimum input capacitance.	6 Marks
		(OR)	
4	a)	Prove that the input transconducatance and output impedance of FGMOS are relatively smaller with respect to MOS transistor.	6 Marks
	b)	Illustrate application of FGMOS through two circuit designs of your choice.	6 Marks

UNIT-III

5	a)	Explain about the Reliability Aware Scheduling and Task Allocation	8 Marks
	b)	Draw and explain simple processor microarchitecture that indicates high-capacitance nodes.	4 Marks
		(OR)	
6	a)	Explain the CoolRISC Microcontroller Architecture	7 Marks
	b)	Explain the simple and safe way of generating enable signals for clock gating.	5 Marks

UNIT-IV

7	a)	Narrate power dissipation sources in the context of RF CMOS IC.	6 Marks
	b)	Discuss the radio receiver front end design challenges.	6 Marks
		(OR)	
8	a)	Evaluate the effects of down scaling the supply voltage V_{DD}.	6 Marks
	b)	Discuss image problem, inter modulation problems in radio receivers with appropriate remedies.	6 Marks

UNIT-V

9	a)	Draw the schematic of a general MTCMOS circuit	7 Marks
	b)	Explain topologies of RF amplifier design.	5 Marks
		(OR)	
10	a)	Explain current reuse operation principle for power saving in RF.	7 Marks
	b)	Describe phase frequency detector design constrains.	5 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

SATELLITE COMMUNICATIONS

[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 look angles? With neat diagrams, explain how azimuth angle are determined?	6 Marks
	b)	State Kepler's three laws of planetary motion. Explain their relevance to artificial satellites orbiting the earth.	6 Marks
		(OR)	
2	a)	Discuss about near Geostationary orbits.	6 Marks
	b)	Draw the block diagram of TT&C and explain its blocks.	6 Marks

UNIT-II

3	a)	Explain different types of satellites based on altitude.	6 Marks
	b)	Explain about the sun synchronous orbit.	6 Marks
		(OR)	
4	a)	Explain operational NGSO constellation designs.	6 Marks
	b)	LEO system that needs to scan 57.2^0 away from boresight. Find the scan loss?	6 Marks

UNIT-III

5		Give comparison between fixed and on-demand assignment techniques and explain the SPADE system.	12 Marks
		(OR)	
6		What is meant by synchronous and asynchronous protocol? Explain the ALOHA and S-ALOHA Protocols in detail.	12 Marks

UNIT-IV

7	a)	Describe in your own words acquisition and tracking are achieved in a DS/SS system. And also derive the expression how signal for maximal sequence.	6 Marks
	b)	Explain in detail acquisition for a FH spread spectrum system.	6 Marks
		(OR)	
8	a)	Explain about error rate performance in pulsed jamming.	6 Marks
	b)	How PN sequence will be generated in spread spectrum system?	6 Marks

UNIT-V

9	a)	Write a short note on VSAT technologies.	6 Marks
	b)	Explain about MSAT network using CDMA technique.	6 Marks
		(OR)	
10	a)	Derive the expression for $[C/N_0]_u$ for the uplink.	6 Marks
	b)	Explain the block diagram of the coding and decoding operations in DBS-TV signal.	6 Marks

CODE No.:14MT16301 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

NETWORK MANAGEMENT

[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		Write about the network management functions and its architecture and organization.	12 Marks
		(OR)	
2	a)	Explain the various types of network models.	6 Marks
	b)	Illustrate with an example the use of ASN.1 from ISO 8824.	6 Marks

UNIT-II

3		Explain briefly the different types of groups of management of information base.	12 Marks
		(OR)	
4		Write a view on the architecture of SNMP network management with neat diagram.	12 Marks

UNIT-III

5	a)	Explain the protocols of SNMP**v**3 used in security model.	8 Marks
	b)	Draw the flowchart of VACM process.	4 Marks
		(OR)	
6		Explain briefly the modules and its definitions of SMI for SNMP**v**2.	12 Marks

UNIT-IV

7		Explain the remote probes for RMON on an ATM network.	12 Marks
		(OR)	
8	a)	Draw the integrated view of TMN services and functions.	6 Marks
	b)	Explain the business process framework of **e**TOM.	6 Marks

UNIT-V

9		Explain the role of SNMP and ILMI in ATM management information base.	12 Marks
		(OR)	
10		Write the Java management extensions used for web based management.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

WIRELESS NETWORKS

[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)	Write short notes on Cellular Networks.	6 Marks
	b)	Explain Three-phase traffic theory.	6 Marks
		(OR)	
2		Describe in detail about the Sensor Networks.	12 Marks

UNIT-II

3		Explain the procedure for generating a secret key in wireless networks.	12 Marks
		(OR)	
4		Define the following:	
		a) Doppler effect	4 Marks
		b) Fast Fading	4 Marks
		c) Free Space Propagation	4 Marks

UNIT-III

5		What are the guidelines for providing a contention based protocol (CBP) and explain operational description?	12 Marks
		(OR)	
6		What is analog modulation and state various techniques?	12 Marks

UNIT-IV

7	a)	Write the applications of MANET.	6 Marks
	b)	What are the essential features of MANET?	6 Marks
		(OR)	
8	a)	Explain the various stages of Sensor Deployment.	6 Marks
	b)	List out the Sensors application in Military.	6 Marks

UNIT-V

9	a)	What are the data services offered by GSM?	6 Marks
	b)	Explain the AODV and DSDV protocol.	6 Marks
		(OR)	
10		Explain the MAC Management and Connection Management in detail.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

DATA WAREHOUSING AND DATA MINING

[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		Describe in detail about three-tier Data warehouse architecture with a neat diagram.	12 Marks
		(OR)	
2		Explain in detail about the following: i) Object-Relational Databases ii) Temporal databases, Sequence Databases iii) Text Databases and Multimedia Databases iv) Data Streams.	12 Marks

UNIT-II

3.	a)	Data quality can be assessed in terms of accuracy, completeness and consistency. Propose two other dimensions of data quality.	6 Marks
	b)	Describe various methods of handling missing values in real world databases.	6 Marks
		(OR)	
4.		Explain *apriori* algorithm with suitable example for finding frequent item sets.	12 Marks

UNIT-III

5.	a)	Discuss classification by decision tree induction, Bayesian methods and rule based methods.	6 Marks
	b)	What is back propagation and discuss classification by back propagation.	6 Marks
		(OR)	
6.	a)	Briefly outline the major steps of Rule based classification.	6 Marks
	b)	Discuss the issues involved in classification and prediction.	6 Marks

UNIT-IV

7.	a)	Discuss Hierarchical methods, Density based methods and Grid based methods.	6 Marks
	b)	Describe about BIRCH, Chameleon Hierarchical methods.	6 Marks
		(OR)	
8.	a)	Discuss DBSCAN and OPTICS.	6 Marks
	b)	Write algorithms for K-means and K-medoids	6 Marks

UNIT-V

9.		Write about sequential pattern mining and any three algorithms for the same.	12 Marks
		(OR)	
10.	a)	Write short notes on Spatial data mining.	6 Marks
	b)	Write short notes on Multimedia data mining.	6 Marks

CODE No.:14MT20507 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

INFORMATION SECURITY

[Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about interception, modification and fabrication with diagrams.	6 Marks
	b)	Explain the terms: i) Authentication ii) Non-Repudiation with an example.	6 Marks
		(OR)	
2	a)	Explain AES algorithm.	6 Marks
	b)	Explain Key distribution scenario.	6 Marks

UNIT-II

3	a)	Explain SHA-1 algorithm.	6 Marks
	b)	Compare public key, private key and secret key.	6 Marks
		(OR)	
4	a)	In a public key system using RSA, you intercept the ciphertext C = 10 sent to user whose public key is e = 5, n = 35; What is the Plaintext M?	6 Marks
	b)	Write about DSS.	6 Marks

UNIT-III

5	a)	Explain Kerberos secure authentication dialogue.	6 Marks
	b)	What are different cryptographic algorithms used for S/MIME? Explain.	6 Marks
		(OR)	
6	a)	Explain Public key management.	6 Marks
	b)	Explain Enhanced security services.	6 Marks

UNIT-IV

7	a)	Explain about IPSEC services.	6 Marks
	b)	Explain about ESP format in IP security.	6 Marks
		(OR)	
8	a)	Explain network management protocol architecture.	4 Marks
	b)	Explain about transport layer security.	8 Marks

UNIT-V

9	a)	What are the various types of Viruses?	6 Marks
	b)	Write about Worms.	6 Marks
		(OR)	
10	a)	Explain various configurations of firewalls.	6 Marks
	b)	What are the various virus counter measures?	6 Marks

CODE No.:14MT20508 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

MOBILE COMPUTING

[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 are traffic and control data channels? Explain the control channels.	6 Marks
	b)	Explain GPRS system architecture with neat diagram.	6 Marks
		(OR)	
2	a)	What is meant by GPRS protocol layers? Explain how mobile station and base station subsystem signalling protocols works.	6 Marks
	b)	What features of a GSM system are provided with the help of the SIM card in a mobile station?	6 Marks

UNIT-II

3	a)	What is mobile IP network? Explain its characteristics.	6 Marks
	b)	Explain in detail about Mobility Binding.	6 Marks
		(OR)	
4	a)	Explain difference between Tunnelling and Encapsulation.	6 Marks
	b)	Describe the main features of TCP.	6 Marks

UNIT-III

5	a)	Explain different recovery models used in data recovery processes.	6 Marks
	b)	Describe the query processing architecture.	6 Marks
		(OR)	
6	a)	Explain the ADO.NET transaction commands.	6 Marks
	b)	What is meant by Data caching? Explain cache invalidation mechanism.	6 Marks

UNIT-IV

7	a)	Describe at residential gateway.	6 Marks
	b)	Compare the features of HotSync, ActiveSync and IntelliSync.	6 Marks
		(OR)	
8	a)	What is application server? Give the various functions of the application server.	6 Marks
	b)	What is service discovery? Explain about device support infrastructure.	6 Marks

UNIT-V

9	a)	Describe DOM model of an XML document.	6 Marks
	b)	Explain the characteristics and features of J2ME.	6 Marks
		(OR)	
10	a)	What are the various functions of device management? Explain.	6 Marks
	b)	List the functions of a middle line? Write the key application and API in a new generation mobile device.	6 Marks

CODE No.:14MT23808 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Regular Examinations April - 2015

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)	Account for the phenomenon of dispersion in optical fibers, and explain the salient features of inter-modal and waveguide dispersions.	6 Marks
	b)	List out the sources of non-linearities in optical fibers, and describe the Stimulated Raman Scattering Process and its effects.	6 Marks
		(OR)	
2	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 performances 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

UNIT-II

3	a)	List and Explain the Type 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)	What is splicing? Explain about the types and Splicing Techniques.	6 Marks
	b)	Explain the procedures to measure the splicing effects.	6 Marks

UNIT-III

5		What is Lambertian Pattern? Draw the hetero structure Surface LED structure and explain the working principle.	12 Marks
		(OR)	
6		Differentiate between various photodiodes With respect to their internal and external quantum efficiencies.	12 Marks

UNIT-IV

7	a)	Illustrate the principle of Sub-Carrier Modulation and Multiplexing, commenting on non-linearity and clipping issues.	6 Marks
	b)	With a neat schematic, explain the principle of working of a Coherent Detection Receiver, listing out the merits and demerits.	6 Marks
		(OR)	
8	a)	Explain the significance of the term 'spectral efficiency' in optical communication system, and account for its improvement in optical SSB and multi-level modulation techniques.	6 Marks
	b)	Derive and compare the expressions for the BER of practical and ideal direct detection receivers.	6 Marks

UNIT-V

9	a)	Explain any two of the following PON's i) Broad cast and select WDM PON (WPON) ii) Wavelength routing PON(WRPON) iii) RITENET WPON	8 Marks
	b)	Explain in detail about the different types of fiber access networks, based on how close the fiber gets to the end user.	4 Marks

(OR)

10	a)	In PPS network how two pulse streams are aligned with tunable delays and optical phase lock loop. Explain in detail.	6 Marks
	b)	What is the motivation of TESTBEDS? Explain the projects undertaken by the KEOPS, AON and CORD.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Supplementary Examinations October - 2015

RESEARCH METHODOLOGY

[Computer Science, Electrical Power Systems, Software Engineering, Digital Electronics and Communication Systems, V L S I , Communication Systems, 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		Bring out the meaning of the research as you understood from the coursework, clearly highlighting the objectives, motivation and approaches to research.	12 Marks
		(OR)	
2		Describe briefly the various sampling techniques used in a research process.	12 Marks

UNIT-II

3		What is a research problem? Define the main issues which should receive the attention of the researcher in formulating the research problem.	12 Marks
		(OR)	
4		Describe the research design for exploratory, descriptive and diagnostic research studies.	12 Marks

UNIT-III

5	a)	Differentiate the questionnaire and schedule for data collection.	6 Marks
	b)	Describe the different analysis for processing the data.	6 Marks
		(OR)	
6	a)	What is hypothesis? What characteristics it must possess in order to be a good research hypothesis?	6 Marks
	b)	Distinguish between null hypothesis and alternative hypothesis.	6 Marks

UNIT-IV

7	a)	Calculate the missing frequency if $\overline{X} = 28$ and assumed mean = 25 from the following data.	8 Marks

X :	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 – 60
F :	12	18	27	A	17	6

	b)	Distinguish between geometric mean and harmonic mean.	4 Marks
		(OR)	
8	a)	Explain the merits and demerits of mode.	4 Marks
	b)	Describe the procedure for chi-square test.	8 Marks

UNIT-V

9		Explain the mechanics of writing a Research Report.	12 Marks
		(OR)	
10	a)	Discuss the steps involved in the techniques of interpretation.	6 Marks
	b)	Explain the precautions for writing Research Reports.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Supplementary Examinations October - 2015

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 when there is no mutual coupling, the diagonal and off diagonal elements of the Y_{BUS} matrix can be computed from $Y_{ii} = \sum_j Y_{ij}$ and $Y_{ii} = -Y_{ij}$ where $\mathbf{Y_{ij}}$ is the sum of the admittance of all the lines connecting buses **i** and **j**. 6 Marks

b) Impedances connected between various buses are as follows ; 6 Marks
$X_{10} = j2.5, X_{30} = j1.25, X_{12} = j0.5, X_{23} = j0.3, X_{31} = j1.25,$
where '0' is reference node. All the impedances are in pu.
Determine bus impedance matrix for the network connecting above impedances.

(OR)

2 a) Write the step by step algorithm for formation of Z_{BUS}, containing mutual elements for adding a branch. 6 Marks

b) Compute the bus impedance matrix for the system shown in fig.1 by adding element by element take bus 2 as reference. 6 Marks

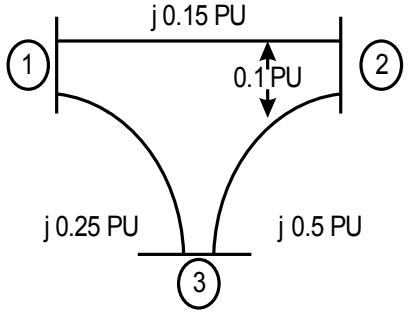

Fig.1

UNIT-II

3 a) Explain the Gauss-Siedel method algorithm for load flow solution by considering all buses other than the slack are PQ buses. 6 Marks

b) Derive the static load flow equations in load flow studies. 6 Marks

(OR)

4 a) For the system of Fig.2 find the voltage at the receiving bus at the end of the first iteration. Load is **2+j0.8** pu. Voltage at the sending end (slack) is **1+j0** pu. Line admittance is **1.0-j4.0** pu. Transformer reactance is **j0.4** pu. Off-nominal turns ratio is **1/1.04**. Use the GS technique. Assume $V_R = 1 + j0$. 6 Marks

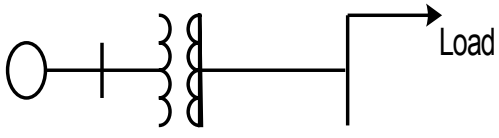

Fig.2

b) Compare and contrast various load flow methods used in power system studies. 6 Marks

UNIT-III

5 a) Two generators P & Q each of 6000KVA capacity and reactance 8.5% are connected to a bus bar at A. A third generator R of capacity 12000KVA with 11% Reactance is connected to another bus bar B. A Reactor X of capacity 5000KVA and 5% Reactance is connected between A & B. Calculate the short circuit KVA supplied by each generator when a fault occur (a) At A and (b) At B. 6 Marks

b) Consider the system shown in Fig.3. The percentage Reactance of each alternator is expressed on its own capacity. Determine the short circuit current that will flow into a dead 3-phase short circuit at F. 6 Marks

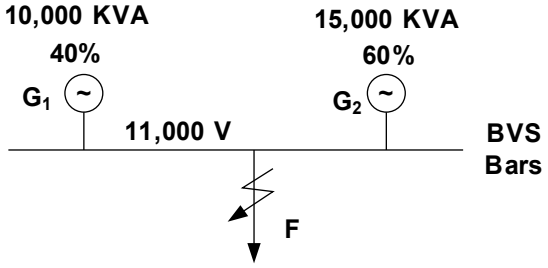

Fig.3

(OR)

6 a) What is the effect of fault impedance? Explain. 6 Marks

b) Consider the system shown in Fig.4. Phase b is open due to conductor break. Calculate the sequence current and the neutral current. 6 Marks

$\mathbf{I_a = 100 \quad \angle 0^0\ A}$

$\mathbf{I_b = 100 \quad \angle 120^0\ A}$

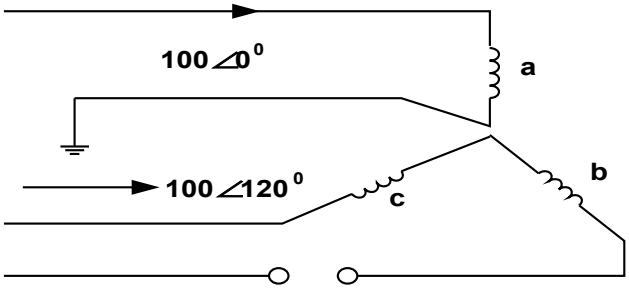

Fig.4

UNIT-IV

7 a) Explain the contingency analysis procedure and also draw the flow chart. 6 Marks

b) Explain the factors affecting the power system security. 6 Marks

(OR)

8 a) Explain the contingency analysis using sensitivity factors. 6 Marks

b) Explain about Generation shift factors and line outage distribution factors. 6 Marks

UNIT-V

9 a) What is meant by number of degrees of freedom? 6 Marks

b) Explain the solution procedure for the state estimation using the weighted least square method with a suitable example. 6 Marks

(OR)

10 a) How do you define the network observability? 6 Marks

b) With an example explain the determination of performance of index for weighed measurements in the state estimation. 6 Marks

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CODE No.:14MT12502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Supplementary Examinations October - 2015

SOFTWARE PROCESS AND PROJECT MANAGEMENT

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1	a)	What is the Process Maturity Framework?	4 Marks
	b)	Explain five stages of Maturity Framework.	8 Marks
		(OR)	
2		Discuss in detail the Initial process, the Repeatable process and the Managed process.	12 Marks

UNIT-II

3	a)	Discuss in detail the Software standards and inspections.	6 Marks
	b)	Defining the Software Process.	6 Marks
		(OR)	
4		Explain about managing software quality. Discuss about the Automating the software process.	12 Marks

UNIT-III

5		You work for a large “social networking" company which has recently introduced a one-to-one chat mechanism, promising that they will never censor conversations. Users are now reporting that their friends' computers are being compromised by malicious software. When users click on links within messages sent by this malicious software, their machine is also compromised, and spreads the infection still further. A crisis meeting has decided that the chat software must be modified to block this “worm" behaviour. As manager of this project, how will you approach the development, how will you estimate how long the task will take and how will you establish that your solution is safe to deploy?	12 Marks
		(OR)	
6	a)	In today's world how will you handle Data Gathering and Analysis with the onset of Disruptive Technologies (e.g., Internet of things, Cloud Computing) ?	6 Marks
	b)	Discuss how you will manage software quality.	6 Marks

UNIT-IV

7	a)	Explain briefly about the Project Organizations.	6 Marks
	b)	Explain the process Automation.	6 Marks
		(OR)	
8	a)	Explain about Cost and Schedule Estimating Process.	6 Marks
	b)	Explain about Iterative process planning.	6 Marks

UNIT-V

9	a)	Discuss the people factors of CCPDS-R.	6 Marks
	b)	Discuss in detail the modern software economics.	6 Marks
		(OR)	
10		“An objective case-study is a true indicator of a mature organization”. Explain this based on significance of case-study with an example.	12 Marks

CODE No.:14MT20503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Supplementary Examinations October - 2015

DATA WAREHOUSING AND DATA MINING

[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 a data warehouse? Explain about data warehouse implementation.	6 Marks
	b)	Distinguish between descriptive and predictive data mining.	6 Marks
		(OR)	
2	a)	List and explain the different schemas available in a data warehouse with a suitable example.	6 Marks
	b)	Describe in detail about the mining methodology and user interaction issues in data mining.	6 Marks

UNIT-II

3	a)	Explain the need and steps involved in data preprocessing.	6 Marks
	b)	Explain Apriori algorithm with an example.	6 Marks
		(OR)	
4	a)	Describe how concept hierarchies are useful in data mining.	6 Marks
	b)	How can we mine multilevel association rules efficiently using concept hierarchies? Explain.	6 Marks

UNIT-III

5	a)	Explain the major steps involved in Rule based classification.	6 Marks
	b)	Discuss about evaluating the accuracy of a classifier.	6 Marks
		(OR)	
6	a)	What is Bayes theorem? Explain about naïve Bayesian classification.	6 Marks
	b)	Explain regression in predictive modeling.	6 Marks

UNIT-IV

7	a)	Explain the hierarchical clustering methods.	6 Marks
	b)	The measurement for variable age 18, 22, 25, 42, 28, 43, 33, 35, 56, 28 standardizes the variable by computing mean absolute deviations, z-score.	6 Marks
		(OR)	
8	a)	Explain density based clustering methods.	6 Marks
	b)	Write algorithms for K-means and K-medoids.	6 Marks

UNIT-V

9	a)	What is spatial data mining? Illustrate with an example.	6 Marks
	b)	Bring out the various techniques used to mine knowledge from time series data.	6 Marks
		(OR)	
10	a)	What kind of association can be mined in multimedia data? Explain.	6 Marks
	b)	Briefly discuss about Text mining approaches.	6 Marks

CODE No.:10MT23802

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Supplementary Examinations April - 2015

CODING THEORY AND TECHNIQUES

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) A discrete source generates two dependent symbols A and B with conditional probabilities P (A/A)=0.8, P(B/A) =0.2) P (A/B)=0.6, P (B/B)=0.4 . Determine the Probabilities of symbols A and B and entropy of the source.
b) Define Entropy. Explain the properties of entropy.

2. a) What is Huffman coding? Explain Huffman encoding algorithm.
b) Five symbols of the alphabet of a discrete memory less source and their probabilities are given below.

symbols	S0	S1	S2	S3	S4
probabilities	0.4	0.2	0.2	0.1	0.1

Determine Huffman code, Average -Code -Word length, Entropy.

3. a) The generator matrix for a (7, 4) block code is

$$G = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 1 & 1 \\ 0 & 1 & 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 1 & 1 & 1 \end{bmatrix}$$

Find the 16 code words of this code.
b) Discuss the error detecting and error correcting capabilities of linear block Codes.

4. a) What is Hamming distance? Discuss the error detection and correction capabilities of Hamming codes.
b) Give the mathematical description of linear block codes.

5. Obtain the generator matrix for a systematic (7, 4) cyclic code if $\mathbf{g(x) = 1+x+x^3}$. Also obtain the parity check matrix.

6. a) Explain the convolution encodes with constraint length K and rate K/n.
b) Draw the tree representation of encoder with rate =1/2 and K=3.

7. Consider the message sequence m = 1 1 0 1 1, code word sequence U = 1 1 0 1 0 1 0 0 0 1 and the received sequence was Z = 1 1 0 1 0 1 1 0 0 1. Draw the decoding Trelli's diagram using Viterbi decoding. Explain the procedure used for this decoding.

8. a) How the R-S codes perform better against burst noise?
b) Explain the basic properties of Falio fields.

CODE No.:10MT23807

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Supplementary Examinations April - 2015

IMAGE PROCESSING

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail the KL Transforms with an application.
b) Write notes on Haar Transform.

2. a) Explain in detail the concept of Homomorphic filtering using relevant equations and the block diagram.
b) Explain in detail the Image smoothing and Image sharpening filters with an example.

3. Discuss in detail about Degradation model using neat block diagram.

4. a) Discuss the need for Image segmentation and explain the various thresholding techniques.
b) What is Hough Transform? Discuss various methods for edge detection.

5. Using the block diagram, discuss about the compression model.

6. a) What is called *lossless* compression in image processing? Give applications where lossless image compression is used.
b) Explain about run length encoding.

7. Write short notes on Motion estimation.

8. a) Explain content dependent video coding.
b) Explain about video formation.

CODE No.:10MT26105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Supplementary Examinations April - 2015

RF SYSTEMS AND CIRCUITS

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about lumped element circuit model for a transmission line.
b) A 50 Ω transmission line is matched to 10v source and feeds a load Z_L=100Ω. If the line is 2.3 **λ** long and has an attenuation constant **α**=0.5 dB/**λ**, find the powers that are delivered by the source lost in the line and delivered to the load.

2. a) Explain the characteristics of parallel coupled strip lines.
b) Show that the admittance matrix of a lossless N port network has purely imaginary element.

3. a) What is Stub? Why are short- circuited stubs preferred to open circuited ones? Explain.
b) With aid of Smith chart, calculate the position and length of short circuited stub matching a (180+j120) ohm load to a 300 ohm transmission line. Assuming that the load impedance remains constant, find the VSWR on the main line when the frequency is i) Increased by 10% ii) Doubled.

4. a) What are cavity resonators?
b) What is hybrid ring coupler?

5. a) Write and explain application of phased arrays.
b) Briefly explain:
i) Switched line phase shifters ii) Loaded line phase shifters.

6. a) What is spur line band stop filter?
b) What is parallel coupled band pass filter?

7. a) What are MMIC and MEMS technologies?
b) Describe the realization of filter in MEMS.

8. a) Explain working of balanced demodulator.
b) Explain detector peak clipping, negative clipping problem of AM detector.

CODE No.:10MT26301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Supplementary Examinations April - 2015

DESIGN OF SECURE PROTOCOLS

[Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss Strong One way hash functions and Weak One way hash functions.
b) Giving an example, list all the candidates of One-way hash function.

2. Describe the operational difference between DES and AES encryption techniques. Also discuss their strengths and weaknesses.

3. What are the constructions that can be based on one-way permutations?

4. Write note on the following:
a) Message Authentication Code
b) The CBC MAC
c) Random permutations
d) Security of CTR modes

5. Describe in detail DES block cipher algorithm.

6. Explain
a) Trapdoor predicates using single bit.
b) Problems with the Trapdoor Function Model.

7. Explain the following:
a) Cryptography based on integer factorization
b) Discrete logarithms
c) PRF as a MAC paradigm
d) One time pad encryption technique

8. a) Write in Brief about the Birthday attack on the CBC.
b) Explain how privacy does not imply authenticity.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

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)	Give a brief note on instruction set architecture.	6 Marks
	b)	Find the die yield for dies that are 1.5 cm on a side and 1.0 cm on a side, assuming a defect density of 0.4 per cm^2 and α is 4.	6 Marks
		(OR)	
2	a)	List and explain the advanced optimizations of cache performance.	6 Marks
	b)	Describe the memory technology and optimizations.	6 Marks

UNIT-II

3	a)	Draw and explain the functional design of MIMD multiprocessor system.	6 Marks
	b)	Write the characteristics of dynamic network.	4 Marks
	c)	Define Network Diameter.	2 Marks
		(OR)	
4	a)	Describe program flow mechanisms and make a comparison among them.	6 Marks
	b)	Give a brief note on five generations of electronic computers.	6 Marks

UNIT-III

5	a)	Explain the memory bounded speedup model in detail.	8 Marks
	b)	List the Massive parallelism for grand challenges.	4 Marks
		(OR)	
6	a)	Describe two types of bus arbitration.	7 Marks
	b)	Explain cache addressing model with neat diagram.	5 Marks

UNIT-IV

7	a)	Give the reasons for conflicts in pipelined processor. Discuss the various conflicts that might arise in a pipeline. How they resolved?	8 Marks
	b)	Give a brief note on asynchronous pipeline model.	4 Marks
		(OR)	
8	a)	How would you use the floating-point pipeline adder to add 100 floating-point numbers $X_1+X_2+X_3+\ldots..+X_{100}$?	8 Marks
	b)	Describe the collision free scheduling.	4 Marks

UNIT-V

9	a)	Explain the different vector instruction type.	10 Marks
	b)	List the architecture goals of multivector multiprocessor.	2 Marks
		(OR)	
10	a)	Explain the programming model GPU.	3 Marks
	b)	Explain the goals and requirements of WSC.	9 Marks

CODE No.:14MT20502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

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) Describe the essential properties of the following types of operating systems: (i) Time sharing system, (ii) Distributed system. 6 Marks

b) Discuss the issues to be considered with multi threaded programs. 6 Marks

(OR)

2 Explain the FCFS, preemptive and non-preemptive versions of Shortest Job First and Round Robin (time slice =3) scheduling algorithms with Gantt Chart for the four processes given. Compare their average turn around and waiting time. 12 Marks

Process	Arrival Time	Burst Time
P1	0	10
P2	2	8
P3	4	10

UNIT-II

3 How does deadlock avoidance differ from deadlock prevention? Write about deadlock avoidance algorithm in detail. 12 Marks

(OR)

4 What are the minimum requirements that should be satisfied by a solution to critical section problem? Write Peterson Algorithm for two-process synchronization to critical section problem and discuss briefly. 12 Marks

UNIT-III

5 a) With a neat sketch, explain how the logical address is translated into physical address using Paging mechanism 8 Marks

b) Briefly discuss about various directory structures. 4 Marks

(OR)

6 a) Explain about the RAID structure in disk management with various RAID levels of organization in detail. 8 Marks

b) Briefly explain about memory hierarchy. 4 Marks

UNIT-IV

7 a) Explain the concept of STREAMS and its performance. 8 Marks

b) List the Goals of protection. 4 Marks

(OR)

8 a) How do you ensure User Authentication? 4 Marks

b) Explain the concept of Access Control and Revocation of Access rights. 8 Marks

UNIT-V

9 Describe the method for implementation of RPC in distributed systems. 12 Marks

(OR)

10 How do clock synchronization issues differ in centralized and distributed systems? Explain with suitable examples. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

DATA WAREHOUSING AND DATA MINING

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is a data warehouse? Explain about data warehouse implementation.	6 Marks
	b)	Distinguish between descriptive and predictive data mining.	6 Marks
		(OR)	
2	a)	List and explain the different schemas available in a data warehouse with a suitable example.	6 Marks
	b)	Describe in detail about the mining methodology and user interaction issues in data mining.	6 Marks

UNIT-II

3	a)	Discuss the various methods used for Data Cleaning and Data Reduction with some illustrative examples.	6 Marks
	b)	Explain about constraint based association mining.	6 Marks
		(OR)	
4		State and explain the Apriori Algorithm used to find the association rules. A database has nine transactions. Let *min_sup = 20%* and *min_conf = 80%.*	12 Marks

TID	ITEM_ID
T100	I1, I2, I5
T200	I2, I4
T300	I2, I3
T400	I1, I2, I4
T500	I1, I3
T600	I2, I3
T700	I1, I3
T800	I1, I2, I3, I5
T900	I1, I2, I3

Find all frequent item-sets using Apriori Algorithm and list all the strong association rules. Describe any two efficient and scalable frequent item set mining methods with an example.

UNIT-III

5	a)	Explain in detail about classification by decision tree induction.	6 Marks
	b)	What are the issues regarding classification and prediction?	6 Marks
		(OR)	
6	a)	Explain classification by back propagation with example.	6 Marks
	b)	Write a short note on case-based reasoning, rough set approach and regression.	6 Marks

UNIT-IV

7	a)	Discuss about the various types of data in cluster analysis.	6 Marks

b) Given two objects represented by the tuples (22, 1, 42, 10) and (20, 0, 36, 8): 6 Marks
   i) Compute the Euclidean distance between the two objects.
   ii) Compute the Manhattan distance between the two objects.
   iii) Compute the Minkowski distance between the two objects, using q = 3.

(OR)

8 a) Explain in detail DBSCAN algorithm. 6 Marks

b) Explain about outlier analysis. 6 Marks

UNIT-V

9 a) Discuss briefly about similarity search in Time-Series analysis. 6 Marks

b) Explain about Spatial data mining. 6 Marks

(OR)

10 a) List and explain various text mining approaches. 6 Marks

b) Briefly discuss about mining the World Wide Web. 6 Marks

CODE No.:14MT20504 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Give brief description about the principles of modeling.	6 Marks
	b)	Draw and explain the Systems architecture for unified modeling language.	6 Marks
		(OR)	
2		Discuss about the building blocks of unified modeling language.	12 Marks

UNIT-II

3	a)	Write about the roles, links, messages used in basic behavioral modeling.	6 Marks
	b)	Define object diagram. Explain about the graphical representations of object diagram of UML in detail.	6 Marks
		(OR)	
4		Explain about basic behavioral modeling use cases.	12 Marks

UNIT-III

5	a)	How do you represent events and signals?	6 Marks
	b)	What is state chart diagram? Explain with an example.	6 Marks
		(OR)	
6	a)	Explain how a deployment diagram can be used to model an embedded system.	6 Marks
	b)	Explain how to model the realization of a Use case.	6 Marks

UNIT-IV

7	a)	How can you say that unified process is Use case driven?	6 Marks
	b)	Explain the concept of generic iteration work flow with a neat diagram.	6 Marks
		(OR)	
8		Explain the role of four P's in unified process.	12 Marks

UNIT-V

9	a)	Outline the activities in the transition phase.	6 Marks
	b)	Give brief description about archetypical construction iteration work flow.	6 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

CODE No.:14MT20505 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

WEB PROGRAMMING

[Computer Science, Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about image mapping in HTML with example.	6 Marks
	b)	Create a cricket score card using table tags.	6 Marks
		(OR)	
2	a)	Explain cascading style sheets with examples.	6 Marks
	b)	Explain the following input components in HTML forms with proper syntax of the corresponding HTML Tags.	
		i) Text input.	2 Marks
		ii) Select table list with multiple selection option.	2 Marks
		iii) Radio buttons.	2 Marks

UNIT-II

3	a)	Demonstrate various built in mathematical functions in Java Script with examples.	6 Marks
	b)	Write a Java Script program to accept three numbers and display the smallest among them using alert method.	6 Marks
		(OR)	
4	a)	Discuss various parameter passing methods in functions of Java Script.	6 Marks
	b)	Write a Java Script program to check whether the given string is palindrome or not.	6 Marks

UNIT-III

5		Explain the following:	
		i) Dynamic HTML.	6 Marks
		ii) Float property.	6 Marks
		(OR)	
6	a)	Write a JavaScript to verify phone number, e-mail id and date formats.	6 Marks
	b)	Compare and contrast HTML and DHTML with suitable example.	6 Marks

UNIT-IV

7	a)	Describe in detail about PHP string functions.	6 Marks
	b)	Describe multi dimensional arrays that PHP uses.	6 Marks
		(OR)	
8	a)	Write the differences between GET and Post methods.	6 Marks
	b)	Write the PHP program to perform e-mail and name validations.	6 Marks

UNIT-V

9	a)	Write short notes about sending Query to Database.	5 Marks
	b)	Write a program display all prime numbers in the range 1 to 100. N value should be submitted through form. Number validation should be taken care.	7 Marks
		(OR)	
10	a)	Write the procedure of determining the rows selected and rows effected.	6 Marks
	b)	Design a PHP page that reads User Name and Favorite Color from the HTML form and then displays user name in Red color and sets user favorite color as a	6 Marks

background color to the web page.

CODE No.:14MT20508 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

MOBILE COMPUTING

[Computer Science]

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 sketch, explain in detail about GSM Architecture.	6 Marks
	b)	Define VLR and HLR. Explain the main functions of VLR and HLR.	6 Marks

(OR)

2	a)	Describe spread spectrum in CDMA.	6 Marks
	b)	Distinguish between medium access control for exposed and hidden terminals and near and far terminals.	6 Marks

UNIT-II

3	a)	What do you mean by point-to-point, multicast and broad cast communication on a network? What is multicast tree? How does it enhance the multicasting efficiency?	6 Marks
	b)	When and how is a mobility binding created between the correspondent and mobile nodes? How does mobility binding optimize the route? Explain.	6 Marks

(OR)

4	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?	6 Marks
	b)	What are the functions of snooping sub-layer in the snooping TCP protocol? Explain.	6 Marks

UNIT-III

5	a)	Draw and explain four-tier architecture. How do multimedia databases serve a mobile device in client-server architecture?	6 Marks
	b)	Describe data caching architecture. Explain data cache maintenance in a mobile environment.	6 Marks

(OR)

6	a)	Compare flat-disk, skewed-disk and multi-disk broadcast models. List the situations in which one is preferred over another.	6 Marks
	b)	Describe Selective tuning.	6 Marks

UNIT-IV

7	a)	Describe the architecture for data synchronization in mobile computing systems.	6 Marks
	b)	Describe with examples, setup and synchronization phases in data synchronization between mobile device and server.	6 Marks

(OR)

8	a)	Describe a transcoding gateway and its applications in mobile computing systems.	6 Marks
	b)	Compare the use of unicasting, multicasting and advertising in service discovery.	6 Marks

UNIT-V

9	a)	What are the packages in J2SE? Explain the APIs and class libraries in each.	6 Marks
	b)	What are the requirements for JavaCard virtual machine? Explain JavaCard technology. How does a card applet differ from an applet? Explain.	6 Marks

(OR)

10	a)	Explain Symbian OS architecture. How are the applications developed for a Symbian device?	6 Marks
	b)	Describe palm OS.	6 Marks

CODE No.:14MT20509 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

VIRTUALIZATION AND CLOUD COMPUTING

[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)	Define Virtualization. What is the role of hypervisor in virtualization?	6 Marks
	b)	Explain in detail about the Taxonomy of virtualization.	6 Marks
		(OR)	
2	a)	Write short notes on Pros and Cons of Virtualization.	6 Marks
	b)	Write short notes on Xenpara virtualization and VMware full virtualization.	6 Marks

UNIT-II

3	Briefly explain the history of cloud computing.	12 Marks
	(OR)	
4	Explain cloud architecture in detail with respect to various deployment models.	12 Marks

UNIT-III

5	What is data intensive computing? Explain about the programming platforms in it.	12 Marks
	(OR)	
6	How can we introduce the map reduce programming model in Aneka platform?	12 Marks

UNIT-IV

7	Explain the general architecture of Amazon EC2 cloud.	12 Marks
	(OR)	
8	How will you launch a Google cloud SQL instance? Also explain the process of creating a connection with the created instance.	12 Marks

UNIT-V

9	Discuss the applications of cloud computing covering various domains.	12 Marks
	(OR)	
10	Discuss the concept of energy efficiency in cloud with suitable examples.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

OPERATION AND CONTROL OF POWER SYSTEMS

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain reduced gradient method, an iterative technique used to solve economic load dispatch problem and write its algorithm. 12 Marks

(OR)

2 a) Draw and explain incremental fuel cost characteristics of a thermal power plant. 6 Marks

b) Derive the condition for economic dispatch without losses. 6 Marks

UNIT-II

3 a) Derive the transmission loss formula and states the assumptions made. 6 Marks

b) Explain the optimal power flow problem formulation with steepest descent method. 6 Marks

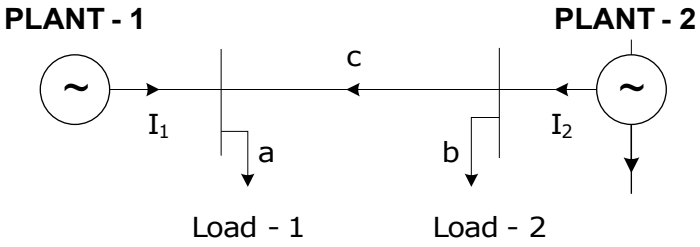
(OR)

4 For the system shown in below figure with bus 1 as the reference bus with voltage of **$1.0\angle 0^{o}$ p.u**., find the loss formula (B_{pq}) coefficients if the branch currents and impedances are 12 Marks

$I_a = (1.00 - j\ 0.15)$ pw $Z_a = 0.02 + j\ 0.15$ pu

$I_b = (0.50 - j\ 0.05)$ pu $Z_b = 0.03 + j\ 0.15$ pu

$I_c = (0.20 - j\ 0.05)$ u $Z_c = 0.02 + j\ 0.25$ pu.



If the base is 100 MVA, what will be the magnitudes of B_{pq} coefficients in reciprocal MW? Also find the incremental transmission losses.

UNIT-III

5 a) Explain the need of unit commitment. 6 Marks

b) Briefly discuss the various characteristics of thermal units with necessary diagrams and expressions. 6 Marks

(OR)

6 A power system network with a thermal power plant is operating by four generating units. Determine the most economical units to be committed to a load demand of 5MW. Also prepare the UC table for the load change s in steps of 1MW starting from the minimum to the maximum load. The minimum and maximum generating capacities and cost-curve parameters of the units listed in a tabular form are as given in below 12 Marks

Capacities and cost-curve parameters of the units

Unit Number	Capacity (MW)		Cost-curve parameters		
	Min	Max	a	b	c
1	1.0	10.0	0.68	22.8	823
2	1.0	10.0	1.53	25.9	120
3	1.0	10.0	1.98	29.0	480
4	1.0	10.0	2.23	30.0	500

UNIT-IV

7 a) Explain the hydro-thermal coordination and its importance. 6 Marks

b) Derive the condition for optimality of short term hydro thermal scheduling problem. 6 Marks

(OR)

8 In a two plant operation system, the hydro plant is operate for 8 hrs during each day and the steam plant is operate all over the day. The characteristics of the steam and hydro plants are 12 Marks

$$C_T = 0.025\ P_{GT}^2 + 14\ P_{GT} + 12 \ \text{Rs/hr}$$

$$w_H = 0.002\ P_{GH}^2 + 28\ P_{GH} \ \text{m}^3/\text{sec}$$

When both plants are running, the power flow from steam plant to load is 200 MW and the total quantity of water is used for the hydro plant operation during 8 hrs is $220 \times 10^6\ \text{m}^3$. Determine the generation of hydro plant and cost of water used. Neglect the transmission losses.

UNIT-V

9 a) Develop the block diagram representation of a two area control system with uncontrolled case. 6 Marks

b) Explain the importance of power pools in interchange of power and energy. 6 Marks

(OR)

10 Explain how the control scheme results in zero tie-line power deviations and zero-frequency deviations under steady state conditions, following a step load change in one of the areas of a two area system. 12 Marks

CODE No.:14MT20702 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

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	a)	Explain about Power Flow and Dynamic Stability considerations of a transmission interconnections.	8 Marks
	b)	Briefly explain about transmission interconnections.	4 Marks
		(OR)	
2	a)	Derive the expression for real and reactive power flow between two nodes of a power system network.	7 Marks
	b)	Briefly explain about *TCVL* and *TCVR*.	5 Marks

UNIT-II

3	a)	With the help of neat sketches, explain the operation and V-I characteristics of TSC-TCR device.	6 Marks
	b)	With a neat diagram, explain control scheme for enhancement of transient stability of a power system by using STATCOM.	6 Marks
		(OR)	
4	a)	With a neat diagram, explain control scheme for power oscillation damping in a power system by using SVC.	6 Marks
	b)	With the help of neat sketches, explain the operation and V-I characteristics of FC-STATCOM device.	6 Marks

UNIT-III

5	a)	Derive the formula for real and reactive power flow of a transmission line with series compensation.	6 Marks
	b)	With a block diagram, explain any one control scheme for TSSC.	6 Marks
		(OR)	
6	a)	Write the cause and effects of sub synchronous resonance on the operation of a power system network.	6 Marks
	b)	With a neat sketch, explain V-I characteristics of GCSC.	6 Marks

UNIT-IV

7		With a neat block diagram, explain in detail about generalized interline power flow controller scheme for comprehensive power transmission control and management of power systems.	12 Marks
		(OR)	
8	a)	Write the basic operating principle of Unified Power Flow Controller.	4 Marks
	b)	Draw the block diagram of overall UPFC control structure and write the function of each block.	8 Marks

UNIT-V

9	a)	What is the need for coordination of different FACTS controllers?	3 Marks
	b)	Explain the different control interactions that are occurring in multiple FACTS controllers.	9 Marks
		(OR)	

10 Explain about TCSC-TCSC interaction with neat diagrams. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

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 different power quality problems with their characteristics.	12 Marks
		(OR)	
2	a)	Define power quality and explain different power quality standards.	6 Marks
	b)	What are the sources of swell in power system?	6 Marks

UNIT-II

3		What is harmonic distortion? Also give comparisons of harmonics *Vs* Transients.	12 Marks
		(OR)	
4		Explain about different effects of harmonics on power system and its components.	12 Marks

UNIT-III

5		What are the principles of voltage regulation and list various conventional voltage regulation devices and explain them briefly?	12 Marks
		(OR)	
6		Explain the following; i) Utility step-voltage regulations ii) Static VAR compensators iii) Series capacitors	12 Marks

UNIT-IV

7		Explain in detail the significance of Solid State Transfer Switch in improving the Power Quality.	12 Marks
		(OR)	
8		Explain the basic operation and control of Dynamic Voltage Restorer in detail. Also explain the realization of DVR.	12 Marks

UNIT-V

9	a)	What are the benefits of distributed generation?	6 Marks
	b)	Explain briefly, how location of DG's are identified in power system.	6 Marks
		(OR)	
10		Explain the following DG operating conflicts i) Utility fault clearing requirements ii) Reclosing iii) Harmonics	12 Marks

CODE No.:14MT20704 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

SMART GRID TECHNOLOGY

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the term Smart Grid.	4 Marks
	b)	Briefly explain the concept of virtual power plant.	8 Marks
		(OR)	
2		Explain various suggested attributes of the Smart Grid from literature.	12 Marks

UNIT-II

3		Explain shared communications and optical fiber communication.	12 Marks
		(OR)	
4	a)	Write standards for smart metering system.	6 Marks
	b)	Explain circuit switching.	6 Marks

UNIT-III

5	a)	List out various security measures shall ensure for providing information in a smart grid.	6 Marks
	b)	Explain the terms in symmetric key encryption: i) Substitution Cipher ii) Transposition Cipher	6 Marks
		(OR)	
6		Explain the Data and Communications security in Smart Grid.	12 Marks

UNIT-IV

7	a)	List out the key components of Smart Metering.	4 Marks
	b)	What is demand side integration?	2 Marks
	c)	Define the terms: i) Demand Side Management (DMS) ii) Demand Response (DR) iii) Demand Side Participation (DSP)	6 Marks
		(OR)	
8		Explain the evolution of Electrical metering with necessary figure and compare the difference between conventional and smart metering with a neat schematic diagram.	12 Marks

UNIT-V

9	a)	Explain different data sources and how to feed it into applications with neat block diagram.	6 Marks
	b)	Explain the Management Systems with a typical configuration.	6 Marks
		(OR)	
10	a)	Briefly explain about the Outage Management Systems (OMS) with a neat block diagram.	6 Marks
	b)	Explain the integration of Micro-Grids to DMS through Micro-Grid Central Controller (MGCC) with a single line diagram.	6 Marks

CODE No.:14MT20705 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

INTELLIGENT CONTROL

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Enumerate the different learning algorithms and come up with numerical examples to illustrate them.	12 Marks
		(OR)	
2		Develop the back propagation architecture and training algorithm in detail.	12 Marks

UNIT-II

3	a)	Mention the advantages and disadvantages of standard logic and fuzzy logic.	6 Marks
	b)	Explain different operations which could be performed on fuzzy sets.	6 Marks
		(OR)	
4		Explain in detail about Fuzzification and Defuzzification.	12 Marks

UNIT-III

5		Name and describe the main features of Genetic Algorithms (GA).	12 Marks
		(OR)	
6		Define the terms chromosome, fitness function, crossover and mutation as used in genetic algorithms. A genetic algorithm is to be used to evolve a binary string of length n containing only 1s. The initial population is a randomly generated set of binary strings of length n. Find a suitable fitness function for this problem.	12 Marks

UNIT-IV

7		Explain about Fuzzy Genetic algorithm systems.	12 Marks
		(OR)	
8		What are the main hybrid architectures? Describe each of them with an example.	12 Marks

UNIT-V

9		What are the various speed control methods of DC machines and explain the application of fuzzy logic system for the speed control of DC machines.	12 Marks
		(OR)	
10		What is load forecasting? Explain how GA is used for load forecasting.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

POWER SYSTEM RELIABILITY

[Electrical Power Systems]

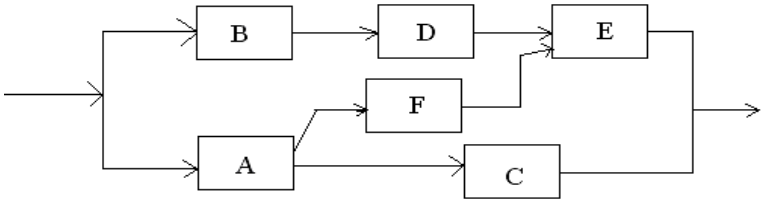
Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

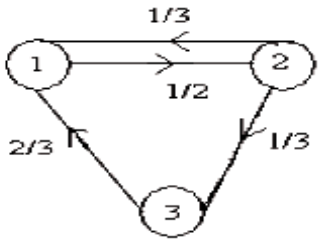
1 a) Derive the expressions for mean and variance of the binomial Distribution. 6 Marks

b) Evaluate the reliability of the following system using Tie-set method, if each component has a reliability of 0.9. 6 Marks



(OR)

2 a) For the three state system shown below, obtain i) Time dependent probability after three time intervals. ii) Limiting state probability. 6 Marks



b) Explain the various regions of bath-tub curve with a neat sketch. 6 Marks

UNIT-II

3 A generating system consists of (i) 1×10 MW (ii) 1×20 MW (iii) 1×25 MW and (iv) 1×35 MW units. The 10,20 and 25 MW units have forced outage rate of 0.09. The 35 MW unit has a full forced outage rate of 0.09 and a 50% derated state which has a probability of 0.07. 12 Marks

a) Calculate the LOLE for this system for a single daily peak load of 55 MW.

b) What is the LOLE for the same condition if the 35 MW unit is represented as a two state model using an Equivalent Forced Outage rate.

(OR)

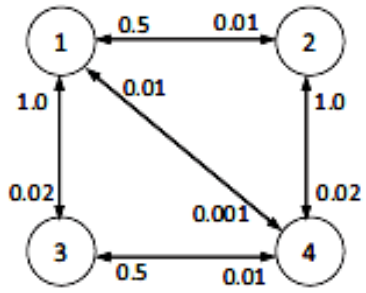
4 a) Draw four state model of a generation system and derive the equation for the probability of residing in each state in terms of the state transition rates. 6 Marks

b) A system consists of two 3 MW units and one 5 MW unit with forced outage rate of 0.02. Obtain 6 Marks
i) Capacity outage probability table for the three unit system and
ii) Capacity outage probability table when rounded at 5 MW increments.

UNIT-III

5 Use the frequency balance approach to evaluate the frequency of encountering 12 Marks

and duration of residing in each of the states shown in figure where rates are expressed in occ/yr.



(OR)

6 Derive the expressions for the frequencies of encountering and mean cycle times of individual states of a two component repairable system. 12 Marks

UNIT-IV

7 Two identical transmission lines operate in a two weather environment with a mean normal weather of 10 days and mean severe weather duration of 0.15 days. The line failure rate is 0.00025/day in normal weather and 0.05/day in severe weather. The repair rate is 1/day. Calculate the probability of double failure using weighted average method 12 Marks

(OR)

8 Explain the probability array method in two interconnected systems and also discuss various factors effects the interconnected system 12 Marks

UNIT-V

9 a) Explain the active and passive failures. 6 Marks

b) Explain customer oriented Reliability indices for radial distribution systems. 6 Marks

(OR)

10 Write short notes on Load and Energy indices for radial distribution systems. 12 Marks

CODE No.:14MT22501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC14) Regular Examinations October - 2015

SERVICE ORIENTED ARCHITECTURE

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the following characteristics of contemporary SOA:	
		a) Contemporary SOA is based open standards.	4 Marks
		b) Contemporary SOA supports vendor diversity.	4 Marks
		c) Contemporary SOA promotes discovery.	4 Marks
		(OR)	
2		Explain how SOA leads to improvements in automated solution construction.	12 Marks

UNIT-II

3	a)	What primitive activities can be limited to the completion of simple MEPs?	6 Marks
	b)	Discuss the Coordination framework with a neat sketch.	6 Marks
		(OR)	
4	a)	Discuss security requirements for SOA.	6 Marks
	b)	Give WS-Eventing specification architecture.	6 Marks

UNIT-III

5		Explain Common top-down strategy process steps with case study.	12 Marks
		(OR)	
6		How service - orientation principles relate to object -orientation principles?	12 Marks

UNIT-IV

7	a)	Discuss agile strategy for the SOA delivery.	6 Marks
	b)	Present step-by-step process for service modeling.	6 Marks
		(OR)	
8	a)	How business automation requirements can be represented in the service oriented analysis?	6 Marks
	b)	Classify business service models in SOA.	6 Marks

UNIT-V

9		Explain service oriented business process design with case study.	12 Marks
		(OR)	
10		Explain the steps to compose SOA.	12 Marks

CODE No.:14MT22502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

SOFTWARE ARCHITECTURE & DESIGN PATTERNS

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write any four benefits of Software Architecture.	4 Marks
	b)	Do you require software architecture for all types of projects (small, medium and large projects)? Justify.	8 Marks

(OR)

2		Compare and contrast any four architectural patterns of your choice. Identify the quality attributes for which these patterns are meant for.	12 Marks

UNIT-II

3		What are the various qualities of business and architecture?	12 Marks

(OR)

4		What is the procedure for extracting information from software architecture?	12 Marks

UNIT-III

5		Explain the importance of CBAM.	12 Marks

(OR)

6	a)	What is the importance of scooping?	6 Marks
	b)	How are the variation points identified?	6 Marks

UNIT-IV

7		Identify various applications where Abstract factor and Builder patterns can be used. Demonstrate the usage with an application and identify the benefits.	12 Marks

(OR)

8		Identify the applications of factory method and Prototype patterns. Demonstrate their usage with an application and identify the benefits.	12 Marks

UNIT-V

9		Explain Adapter and Flyweight structural patterns with suitable examples.	12 Marks

(OR)

10		Discuss the following patterns with examples. i) Command ii) Iterator iii) Observer	12 Marks

CODE No.:14MT22503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC14) Regular Examinations October - 2015

SOFTWARE MEASUREMENT AND METRICS

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail about the Scope of Software Metrics.	6 Marks
	b)	Write short note on Measurement Scales.	6 Marks
		(OR)	
2		Discuss about Representational Theory of Measurement.	12 Marks

UNIT-II

3	a)	Prepare Fault Report on External Problems of the System.	8 Marks
	b)	How do you measure validation?	4 Marks
		(OR)	
4		Discuss in detail about Goal based Frame work for Software Measurement.	12 Marks

UNIT-III

5	a)	How can we measure Product Attributes? Explain in detail.	6 Marks
	b)	Discuss about Cyclomatic Complexity in Product Metrics.	6 Marks
		(OR)	
6	a)	Discuss about Measurable Structures in Product Attributes.	6 Marks
	b)	Explain about Information Flow Attributes in detail.	6 Marks

UNIT-IV

7		Discuss about:	
		i) Quality Management Metrics.	6 Marks
		ii) Productivity Metrics	6 Marks
		(OR)	
8		Elaborate about the Measuring aspects of Quality.	12 Marks

UNIT-V

9	a)	Write Short note on Fix Backlog and Backlog Management Index.	6 Marks
	b)	Briefly explain about Defect Arrival Pattern During Machine Testing.	6 Marks
		(OR)	
10		Explain about:	
		i) Fix backlog and backlog management index.	6 Marks
		ii) Fix response time and fix responsiveness	6 Marks

CODE No.:14MT22504 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC14) Regular Examinations October - 2015

SOFTWARE SECURITY ENGINEERING

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Elaborate on Software Assurance and Software Security.	4 Marks
	b)	Explain the management of Secure Software Development.	8 Marks
		(OR)	
2	a)	What makes Software Secure? Discuss.	4 Marks
	b)	How the assertion and specification of the desired security properties can be carried out? Explain with appropriate illustration.	8 Marks

UNIT-II

3		Explain the steps in requirements engineering for secure software development. Highlight the differences from the general requirements engineering process.	12 Marks
		(OR)	
4	a)	Write notes on SQUARE outputs.	4 Marks
	b)	Explain a scenario for misuse case.	8 Marks

UNIT-III

5	a)	Discuss the Software Security Practices for Architecture and Design.	8 Marks
	b)	Write notes on attack patterns.	4 Marks
		(OR)	
6	a)	Explain in detail about the software security testing methods.	8 Marks
	b)	Write notes on threat analysis	4 Marks

UNIT-IV

7		With suitable examples, explain the Functional and attacker perspectives for security analysis	12 Marks
		(OR)	
8	a)	Discuss about the system complexity related to Software security.	8 Marks
	b)	Write notes on system assembly challenges.	4 Marks

UNIT-V

9		Briefly explain, how much Software Security is enough.	12 Marks
		(OR)	
10		Enumerate the characteristics of effective Security Governance and Management.	12 Marks

CODE No.:14MT22505 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC14) Regular Examinations October - 2015

SOFTWARE TESTING

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail about life cycle of testing with neat sketch.	6 Marks
	b)	Define and restate the differences between Error and Fault with a practical example.	6 Marks
		(OR)	
2	a)	Interpret the equivalence class test cases for a triangle problem.	6 Marks
	b)	Explain briefly about basis path testing.	6 Marks

UNIT-II

3	a)	Define defect bash. Write its advantages and disadvantages.	6 Marks
	b)	Discuss the scenario testing. Consider a typical university academic information system. Identify the typical agents, actors and expected system behaviors for various types of use-case in the system.	6 Marks
		(OR)	
4		What is Regression testing? Why Regression test is applied at the end of each phase? Discuss.	12 Marks

UNIT-III

5		Explain Pair testing, Exploratory testing and Interactive testing in the context of Ad-hoc testing.	12 Marks
		(OR)	
6		Elaborate in detail about grey box testing with respect to object oriented systems.	12 Marks

UNIT-IV

7		What do you mean by Test Management? Explain various aspects of test management in detail.	12 Marks
		(OR)	
8		Write short notes on: i) Project Metrics ii) Release Metrics	12 Marks

UNIT-V

9		Illustrate the generic requirements for test tool framework in detail.	12 Marks
		(OR)	
10		Discuss about: i) Selenium ii) Quick Test Professional testing tool.	12 Marks

CODE No.:14MT22506 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC14) Regular Examinations October - 2015

BIG DATA TECHNOLOGIES

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is Big data? Explain the evolution of big data.	6 Marks
	b)	Discuss Hadoop file systems and their descriptions.	6 Marks
		(OR)	
2	a)	Describe Hadoop Distributed File System Concepts.	6 Marks
	b)	How do you analyze the data with Hadoop?	6 Marks

UNIT-II

3	a)	Write a map reduce workflow to find the mean maximum recorded temperature for every day of the year and every weather station.	6 Marks
	b)	Explain how Job Scheduling is done in Hadoop.	6 Marks
		(OR)	
4	a)	Explain the general form followed for Map reduce programming.	6 Marks
	b)	What are the different types of failures that occurs while running a Map reduce program? Explain.	6 Marks

UNIT-III

5	a)	List the different Map reduce library classes in Hadoop.	6 Marks
	b)	Explain the check pointing process followed in administering Hadoop.	6 Marks
		(OR)	
6	a)	Explain the important HDFS daemon properties.	6 Marks
	b)	What are the steps to be followed in de-commissioning nodes to the Hadoop cluster?	6 Marks

UNIT-IV

7	a)	Differentiate between a managed table and external table in Hive.	6 Marks
	b)	Differentiate between HBase and RDBMS.	6 Marks
		(OR)	
8		Differentiate between HiveQL and SQL.	12 Marks

UNIT-V

9	a)	Write Hadoop and Hive importance in social network.	6 Marks
	b)	Briefly explain how Sqoop performs imports.	6 Marks
		(OR)	
10	a)	Explain Pig and Wukong to explore Billion-edge Network Graphs.	6 Marks
	b)	Explain the Hadoop usage at Last.fm and reasons for adopting Hadoop at Last.fm.	6 Marks

CODE No.:14MT23801 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

DISPLAY TECHNOLOGIES AND DEVICES

[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 electro-optic modulation with the help of a neat diagram.	6 Marks
	b)	Explain briefly: (i) Cathode-luminescence (ii) Photo-luminescence	6 Marks
		(OR)	
2	a)	Explain in detail about HVS.	6 Marks
	b)	Explain about electroluminescence.	6 Marks

UNIT-II

3	a)	Explain in detail about CRT Displays.	7 Marks
	b)	Evaluate Plasma Display Panel.	5 Marks
		(OR)	
4	a)	Explain about the LCD system.	6 Marks
	b)	Explain the behavior of LCD Crystal in (i) presence of field; (ii) absence of field.	6 Marks

UNIT-III

5	a)	Sketch and explain the block diagram of Display Measurement systems.	6 Marks
	b)	Discuss in detail about Colorimetric Measurement.	6 Marks
		(OR)	
6	a)	Sketch and explain the block diagram of Photometric measurements.	7 Marks
	b)	Contrast the Performance of different measurements.	5 Marks

UNIT-IV

7	a)	Why LCDs visually distort under pressure?	6 Marks
	b)	Explain the alignment of LCD devices.	6 Marks
		(OR)	
8	a)	Explain the operation of TFT using a neat block diagram.	6 Marks
	b)	Explain the fringe field switching.	6 Marks

UNIT-V

9	a)	Explain the manufacturing of AMLCD with neat diagram.	6 Marks
	b)	How AMLCD arrays are formed?	6 Marks
		(OR)	
10	a)	Explain optical characteristics of OLED.	6 Marks
	b)	How excited states will be created in OLED?	6 Marks

CODE No.:14MT23802 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

INFORMATION THEORY AND CODING 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) Write notes on Shannon's Source Coding Theorem. 6 Marks

b) Define Entropy, Joint entropy, conditional entropy and differential entropy by giving equations of them. 6 Marks

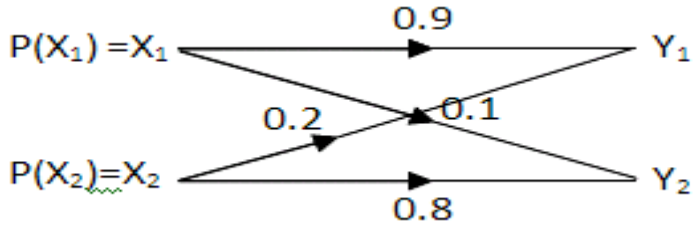
(OR)

2 a) What is entropy? Show that the entropy is maximum when all the symbols are equi-probable. Assume M=3. 6 Marks

b) Consider a discrete memory less source with source probabilities [0.30, 0.25, 0.20, 0.15, 0.10]. Find the source entropy H(X) and $H(X^2)$. 6 Marks

UNIT-II

3 a) Given a binary channel. 6 Marks



i) Find the channel matrix of the channel.
ii) Find $P(Y_1)$ and $P(Y_2)$ when $P(x_1)= P(x_2)=0.5$.
iii) Find the joint probabilities $P(x_1,Y_2)$ and $P(x_2,Y_1)$ when $P(x_1)= P(x_2)=0.5$.

b) Define and explain Channel Capacity. 6 Marks

(OR)

4 a) Write about various discrete memoryless channels in detail. 6 Marks

b) A Channel has the following Channel matrix $[P(Y/\mathbf{x})] = \begin{bmatrix} 1-P & P & 0 \\ 0 & P & 1-P \end{bmatrix}$. 6 Marks

i) Draw the channel diagram.
ii) If the source has equal likely outputs compute the probabilities associated with the channel output for P = 0.2.

UNIT-III

5 a) Design a linear block code with a minimum distance of 3 and a message block size of 8 bits. Give the [G] and [H] matrices. 6 Marks

b) What is syndrome and syndrome decoding in linear block codes? 6 Marks

(OR)

6 a) Write notes on applications of block codes for error control in data storage systems. 6 Marks

b) Explain the error detecting and correcting capability of linear block codes. 6 Marks

UNIT-IV

7	a)	Explain error deviation with an (n-k) stage shift register.	6 Marks
	b)	Draw the encoder for a (7,4) cyclic hamming code.	6 Marks
		(OR)	
8		Explain the Vitrebi algorithm and sequential decoding of convolution codes	12 Marks

UNIT-V

9	a)	Explain the operation of turbo encoder.	6 Marks
	b)	Write about feedback decoder.	6 Marks
		(OR)	
10	a)	Explain coding and interleaving applied to the compact disc digital audio system.	6 Marks
	b)	Write about Read-solomon decoding.	6 Marks

CODE No.:14MT23803 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

MICROCONTROLLER BASED 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	a)	Explain addressing modes of 8051 with proper examples.	6 Marks
	b)	Explain the need of watch Dog timer with proper examples in Real Time Systems.	6 Marks
		(OR)	
2	a)	Writ an assembly language program for 8051 to communicate with PC with baud rate 4800 bps and to display multiplication table of 5 (i.e. 5X1 = 5, 5X2= 10.....etc)	6 Marks
	b)	Explain special function registers required to program serial port of 8051.	6 Marks

UNIT-II

3	a)	Explain all the bits of CPSR and explain program status register instructions with examples.	6 Marks
	b)	Write a short note on SWI instruction of ARM.	6 Marks
		(OR)	
4	a)	What is thumb instruction and need of thumb instructions in ARM? Explain in detail.	6 Marks
	b)	Explain how ARM - THUMB interworking is possible.	6 Marks

UNIT-III

5	a)	Identify CPU registers used in execution of the PIC instruction set and explain the purpose of each register.	6 Marks
	b)	Draw and explain the block diagram of PIC16C74A micro controller.	6 Marks
		(OR)	
6	a)	With a neat sketch, discuss in detail about the architecture of PIC micro controller.	8 Marks
	b)	Mention the few features of Harvard architecture.	4 Marks

UNIT-IV

7	a)	Discuss about interrupt servicing mechanism of PIC microcontroller.	6 Marks
	b)	Write a short notes on: (i) critical region (ii) sleep mode	6 Marks
		(OR)	
8	a)	Demonstrate the operation of Timer1 in PIC 16C74A as external event counter.	6 Marks
	b)	Summarize the Usage of PWM in PIC 16C74A for controlling DC motor.	6 Marks

UNIT-V

9	a)	What is the use of ADC in PIC system design?	6 Marks
	b)	List out the ADC characteristics.	6 Marks
		(OR)	
10	a)	List out the sub routines of I2C bus.	6 Marks
	b)	Explain the temperature sensor in PIC system design.	6 Marks

CODE No.:14MT23804 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

TESTING AND TESTABILITY OF DIGITAL SYSTEMS

[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 Bridging Faults of digital circuits.	6 Marks
	b)	Explain malfunction is modeled by a delay fault.	6 Marks
		(OR)	
2	a)	Discuss about different types of simulation. Explain about event driven simulation.	6 Marks
	b)	Explain breaks and transistor stuck-ones.	6 Marks

UNIT-II

3	a)	Differentiate between random TG and deterministic TG.	4 Marks
	b)	Explain path sensitization.	8 Marks
		(OR)	
4	a)	Discuss about testability trade-offs.	4 Marks
	b)	With an example, write the D-algorithm.	8 Marks

UNIT-III

5	a)	Describe the commonly used Ad Hoc DFT techniques in digital circuits.	6 Marks
	b)	Explain how Use of tristate drivers to improve testability.	6 Marks
		(OR)	
6	a)	Explain the test procedure of a sequential circuit with random access	6 Marks
	b)	Discuss briefly about the following(CO1) i) Non scan techniques ii) Full integrated scan	6 Marks

UNIT-IV

7	a)	Discuss briefly about memory test techniques used in MBIST circuits.	6 Marks
	b)	Write short notes on embedded memory testing.	6 Marks
		(OR)	
8	a)	List out the memory test requirements for MBIST.	6 Marks
	b)	Explain the following BIST architectures i) BILBO ii) LOCST iii) BEST	6 Marks

UNIT-V

9	a)	Analyze the System Level Diagnosis.	4 Marks
	b)	Describe the Diagnosis by UUT reduction.	8 Marks
		(OR)	
10	a)	Explain the Logic Level Diagnosis.	6 Marks
	b)	Discuss pseudo exhaustive.	6 Marks

CODE No.:14MT23805 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

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	a)	Compare different wireless communication systems.	6 Marks
	b)	Explain in Detail about WLL.	6 Marks
		(OR)	
2	a)	Describe the evolution of wireless radio communication systems.	6 Marks
	b)	If 20 MHz of total spectrum is allocated for a duplex wireless FDD cellular telephone system and each simplex channel has 25 KHz RF bandwidth, find: i) The number of duplex channels. ii) The total number of channels per cell site, if N = 4 cell reuse factor is used.	6 Marks

UNIT-II

3	a)	Using the ground reflection (Two-Ray) model and method images, determine the total electric field at any time ***t*** at ***a*** distance ***d***.	4 Marks
	b)	Describe the various types of small scale fading and explain their effect on communication system.	8 Marks
		(OR)	
4	a)	Explain about the scattering phenomena in mobile system.	4 Marks
	b)	Explain the factors considered for prediction of path loss for a particular mobile radio environment.	8 Marks

UNIT-III

5	a)	Explain about Frequency diversity.	6 Marks
	b)	Discuss performance analysis for Rayleigh fading channels.	6 Marks
		(OR)	
6	a)	Explain briefly the applications and working of LMS algorithm.	6 Marks
	b)	Briefly discuss different combining techniques used for improving signal strength.	6 Marks

UNIT-IV

5	a)	Explain in detail about Rake receiver.	6 Marks
	b)	Compare different combining methods.	6 Marks
		(OR)	
6	a)	Explain about Linear transverse equalizer.	6 Marks
	b)	Explain in detail about RMS algorithm.	6 Marks

UNIT-V

9	a)	Explain about multi carrier modulation with overlapping sub channels.	6 Marks
	b)	Show from the definition DFT that circular convolution of discrete time sequences leads to multiplication of their DFTs.	6 Marks
		(OR)	
10	a)	Describe how frequency selective fading can be converted into flat fading using multi carrier modulation.	8 Marks
	b)	Discuss about challenges in multi carrier systems.	4 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC14) Regular Examinations October - 2015

DETECTION AND ESTIMATION OF SIGNALS

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List out any four properties of receiver operating characteristics for simple binary hypothesis tests.	6 Marks
	b)	Explain bays criterion for M hypothesis.	6 Marks
		(OR)	
2	a)	Explain the effect of sampling the band limited random signal.	6 Marks
	b)	Define and explain periodic random processes with necessary equations.	6 Marks

UNIT-II

3	a)	Explain the importance of signal-space diagram with suitable example.	4 Marks
	b)	Derive the matched filter equation and explain the importance of it.	8 Marks
		(OR)	
4	a)	Obtain the transfer function of a matched filter with an input signal $x(t)= e^{a(t/\tau)2}$ in white Noise of power spectral density N_o.	6 Marks
	b)	Derive optimum solution for integrating linear receiver.	6 Marks

UNIT-III

5		The *radar* echo from an aircraft at distance R can be modeled as $r(t) = A \cos[\omega(t-2R/c)]+n(t)$, $0 \le t \le T$ where, ω is the frequency and **T** the duration of transmitted radar pulse, **c** being the speed of **EM** waves in air. The amplitude constant **A** is a measure of the aircraft's back-scattering strength. The echo is corrupted by AWGN n(t) having zero mean, and variance σ^2. Explain how R can be estimated from N measured samples of r(t), using the ML method. What is the variance of the estimate?	12 Marks
		(OR)	
6		Discuss the following estimation methods briefly; i) Least Square estimation ii) Recursive Least Squares estimation	12 Marks

UNIT-IV

7	a)	Discuss with suitable derivation, the estimation of signal parameter using recursive linear mean squared estimation. Assume that the signal is random in nature.	12 Marks
		(OR)	
8		Let $r(u) = \sqrt{p}a(u)+ n(u)$ for $-\infty < u < t$, where $a(u)$ & $n(u)$ are uncorrelated zero mean stationary processes and $S_a(\omega) = \frac{2KP}{\omega^2 + K^2}$ and $S_a(\omega) = \frac{N_o}{2}$ The desired signal is $d(t) = a(t+\infty)$. Find i) The optimum(MMSE) realizable filter. ii) The normalized prediction error.	12 Marks

UNIT-V

9 Write short notes on the following:

i) Min-Max criterion 6 Marks

ii) State of a dynamical system 6 Marks

(OR)

10 Write short notes on the following:

i) Bound and sensitivity with respect to estimators 6 Marks

ii) ROC curve 6 Marks

CODE No.:14MT23808 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

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)	What is cross talk and how many types of cross talks occur in FO communication systems? Discuss any one technique to reduce cross talk in an FOC system.	6 Marks
	b)	List out the impairments in a FO system necessitating power penalties. Mention the criteria to allocate power penalties for these system impairments.	6 Marks
		(OR)	
2	a)	What is Dispersion? Distinguish between Linear and Non-Linear Dispersions.	6 Marks
	b)	Discuss in detail about Stimulated Brillouin and Raman Scattering techniques.	6 Marks

UNIT-II

3	a)	Draw the schematic of an elastic-tube splicing of fibers and explain it.	6 Marks
	b)	Discuss the principle requirements of a good connector design for optical fibers.	6 Marks
		(OR)	
4	a)	Explain the different Splices with neat sketches.	8 Marks
	b)	Write a short note on measurement of splicing effects.	4 Marks

UNIT-III

5	a)	Distinguish between directional couplers and isolators. Explain the operation of an isolator.	6 Marks
	b)	Explain the usage of fiber bragg gratings in optical add/drop elements used in WDM systems.	6 Marks
		(OR)	
6	a)	Describe the principle and operation of Erbium-Doped Fiber Amplifiers.	6 Marks
	b)	Explain the construction and operation of lasers used in optical transmitters.	6 Marks

UNIT-IV

7	a)	Define 'spectral efficiency'. Highlight its significance in increasing the capacity of a FO link. Describe how spectral efficiency can be improved through optical duo binary modulation.	6 Marks
	b)	Compare optical SSB optical duo binary and optical multilevel modulation schemes.	6 Marks
		(OR)	
8	a)	Compare optical SSB optical duo binary and optical multilevel modulation schemes.	6 Marks
	b)	Write short notes on error detection and correction.	6 Marks

UNIT-V

9	a)	Write short notes on OTDM test beds.	6 Marks
	b)	Details the causes and effects of intra channels and inter channel crosstalk in WDM system.	6 Marks
		(OR)	
10		Write a short note on:	
	a)	Fiber to the Curb (FTTC).	6 Marks
	b)	Photonic Packet Switching.	6 Marks

CODE No.:14MT25701 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC14) Regular Examinations October - 2015

PHYSICAL DESIGN AUTOMATION

[VLSI]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Give an algorithm for an exhaustive search by means of back tracking. 6 Marks
b) What are the important entities for VLSI Design? 6 Marks

(OR)

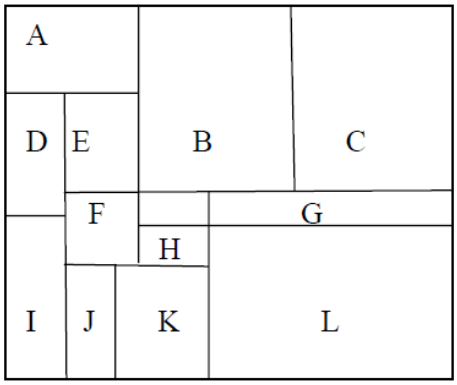
2 a) Explain abstraction levels of a circuit representation and also discuss corresponding views with the help of a circuit example. 6 Marks
b) What are the two methods for finding the optimal solution of a combinatorial optimization problem? Explain. 6 Marks

UNIT-II

3 a) Explain the routing problems in floor planning methods of VLSI design. 6 Marks
b) Discuss constructive and iterative placement approaches in the layout compaction process. 6 Marks

(OR)

4 a) Explain about the Polar Graph in connection with Floor Planning. 6 Marks
b) For the following floor planning, plot 6 Marks
(i) Polar Horizontal Graph (ii) Polar Vertical Graph.



UNIT-III

5 a) What is meant by modeling and simulation? Explain with an example. 6 Marks
b) Explain about two level logic synthesis with suitable example. 6 Marks

(OR)

6 a) What is the principle of ROBDD? Explain how OBDD size is reduced to obtain ROBDD. 6 Marks
b) Explain the data structures to be used for the description of a switch-level simulation algorithm. 6 Marks

UNIT-IV

7 a) Draw the Data Flow Graph of a second order digital filter section. 6 Marks
b) Explain about the hardware models of high level logic synthesis. 6 Marks

(OR)

8	a)	Write short notes on assignments and scheduling.	7 Marks
	b)	Explain about assignment and scheduling relevant to high-level logic synthesis.	5 Marks

UNIT-V

9	a)	Discuss chip array and full custom placement types related to MCMs.	5 Marks
	b)	Explain about segmented and non-segmented models of routing in FPGA architecture.	7 Marks

(OR)

10	a)	Explain about Programmable MCM's.	6 Marks
	b)	Explain about MCM Physical design cycle.	6 Marks

CODE No.:14MT25702 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

LOW POWER VLSI DESIGN

[VLSI]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw the structures of nMOSFET with and without V_T adjust implants and explain briefly.	6 Marks
	b)	Explain the technology and device innovations for novel high speed low power devices.	6 Marks
		(OR)	
2	a)	Briefly outline the needs for low-power VLSI chips?	5 Marks
	b)	Draw the cross-sectional diagram of optimized twin-well BiCMOS structure and explain the process.	7 Marks

UNIT-II

3	a)	Explain in detail about the advantages of copper Inter connects for Deep submicron CMOS / BiCMOS structures.	5 Marks
	b)	What are the advantages due to shallow trench isolation?	7 Marks
		(OR)	
4	a)	Draw the schematics of top view and cross-sectional view of the SOI lateral BJT.	7 Marks
	b)	Explain briefly about prospective technological enhancements for CMOS devices.	5 Marks

UNIT-III

5		Elaborate the effects of mobility degradation, channel length modulation on short empirical short channel MOSFET.	12 Marks
		(OR)	
6		With the starting equations, derive the DC current equation of BJT based on Eber Moll's model.	12 Marks

UNIT-IV

7	a)	How BiCMOS buffer utilizes the PNP BJT in its operation? Plot the output characteristics.	4 Marks
	b)	Differentiate CMOS, TS-FS-BiCMOS, ESD free BiCMOS interms of average power dissipation, supply voltage and propagation delay.	8 Marks
		(OR)	
8	a)	Design bootstrapped CMOS driver using single well CMOS process.	4 Marks
	b)	Interpret the delay dependency on the frequency of operation of two input BiCMOS NAND gate under ESD test.	8 Marks

UNIT-V

9		What is glitch power? Explain how it is eliminated using delay balancing technique with illustration.	12 Marks
		(OR)	
10		Write Short notes on ; (a) Tristate Keeper circuit (b) Clock gating.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC14) Regular Examinations October - 2015

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)	Design inverting switched capacitor integrator that is independent of parasitic capacitance.	6 Marks
	b)	What are the different non-ideal effects in switched capacitor circuits?	6 Marks
		(OR)	
2	a)	The following transfer function describes a bandpass filter having a peak gain of 5 near $f_s/10$ and Q of about 10 $H(z) = -\frac{0.288(z-1)}{z^2 - 1.572z + 0.9429}$ Find the largest to smallest capacitor ratio if this transfer function is realized using the high- biquad circuit. Compare the results to those which would be obtained if the low- circuit were used instead. Let C1=C2=1in both cases.	7 Marks
	b)	Draw the figure of a first order switched capacitor filter with switch sharing.	5 Marks

UNIT-II

3	a)	Explain about small transients in locked conditions.	6 Marks
	b)	Describe the concept of jitter and the rate of change of jitter.	6 Marks
		(OR)	
4	a)	Explain how to increase the acquisition range with the help of frequency detection.	6 Marks
	b)	Draw and explain basic charge pump PLL.	6 Marks

UNIT-III

5	a)	Characterize an ADC fully.	6 Marks
	b)	What is the SNR for an ideal 12-bit unipolar A/D converter with V_{ref} =3V , when a sinusoidal input of 1 V_{pp} is applied? What size input would result in an SNR of 0dB?	6 Marks
		(OR)	
6	a)	Discuss thermometer code converters in detail.	6 Marks
	b)	Find the maximum magnitude of quantization error for a 12-bit A/D converter having V_{ref} equal to 5V and 0.5-LSB absolute accuracy.	6 Marks

UNIT-IV

7	a)	Describe the error correction in successive appropriation converters.	6 Marks
	b)	Draw the four-channel time interleaved A/D converter with clock waveforms.	6 Marks
		(OR)	
8	a)	What are the issues involved in designing flash A/D converters?	6 Marks
	b)	Explain the 1.5 bit per stage pipelined converters.	6 Marks

UNIT-V

9	a)	Give the switched capacitor realization of first order ADC.	6 Marks

b) Explain 1-bit over sampling DAC with the help of appropriate block diagrams. 6 Marks

(OR)

10 a) Discuss realization of decimating and interpolating filters. 6 Marks

b) Explain error feedback structure of a general delta sigma modulator. 6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC14) Regular Examinations October - 2015

RFIC DESIGN

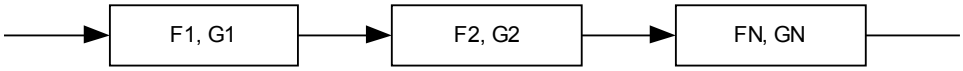
[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Give the definitions of sensitivity and dynamic range.	6 Marks
	b)	Describe time variance and non linearity.	6 Marks
		(OR)	
2	a)	Derive a formula for the overall noise figure of cascade of systems as shown figure below.	6 Marks



	b)	What do you reduce about the relative contributions to noise figure of earlier verses latter stages?	6 Marks

UNIT-II

3		Explain the double heterodyne receiver. What are the advantages in terms of channel selectivity and image rejection? What are the economic disadvantages?	12 Marks
		(OR)	
4	a)	Outline the functionality of the impulse based receiver.	6 Marks
	b)	Envision future transceiver concepts.	6 Marks

UNIT-III

5	a)	Explain about bipolar LNA with its neat sketches.	6 Marks
	b)	What are the general considerations of down conversion mixers? Explain.	6 Marks
		(OR)	
6		Explain about single balanced and double balanced mixers with its neat sketches.	12 Marks

UNIT-IV

7	a)	Describe functional model of Collipits oscillator.	6 Marks
	b)	Explain the simplified model of Collipits oscillator.	6 Marks
		(OR)	
8	a)	What are the basic LC feedback oscillators? Explain in detail any one of them.	6 Marks
	b)	Explain the operation of Pierce crystal oscillator.	6 Marks

UNIT-V

9	a)	Derive an expression for class B power amplifier efficiency.	6 Marks
	b)	Draw class D power amplifier and explain its operation.	6 Marks
		(OR)	
10	a)	Draw and explain block diagram of linearized PLL model.	6 Marks
	b)	Draw and explain block diagram for the second order PLL.	6 Marks

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CODE No.:14MT25705 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

TESTING & 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	a)	Illustrate the concept which deals with element evaluation.	6 Marks
	b)	Explain about various features of structural models.	6 Marks
		(OR)	
2	a)	What are the various types of simulation? Explain about any one of them in detail.	8 Marks
	b)	List out the consequences which lead, if Hazard detection is not done.	4 Marks

UNIT-II

3	a)	Define the terms: i) Redundancy (ii) Fault Dominance	6 Marks
	b)	What is the significance of fault models?	6 Marks
		(OR)	
4	a)	What are the various logic fault models and explain about them?	8 Marks
	b)	Explain in detail about Fault detection.	4 Marks

UNIT-III

5	a)	Explain parallel pattern single fault propagation technique of fault simulation in combinational circuits.	6 Marks
	b)	Explain briefly about fault sampling.	6 Marks
		(OR)	
6		Discuss the extensions needed to allow critical path tracing to handle partially specified vectors.	12 Marks

UNIT-IV

7	a)	Discuss in detail as to how ATPG/ATG is used in detection of sequential circuits.	7 Marks
	b)	What is the procedure adopted for selecting ATPG tool?	5 Marks
		(OR)	
8	a)	Bring out the differences between the compaction and compression.	4 Marks
	b)	What is the need of testing for single stuck faults and explain how it is done?	8 Marks

UNIT-V

9	a)	What do you mean by testability tradeoffs?	4 Marks
	b)	Explain in detail about storage cells for scan designs.	8 Marks
		(OR)	
10	a)	Explain about observability by means of scan registers.	6 Marks
	b)	Explain in detail about system level DFT approaches.	6 Marks

CODE No.:14MT25707 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

CO-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)	What are the requirements for the Ideal Co-design Environment?	5 Marks
	b)	Discuss a Generic Co-Design methodology with the help of flow graph.	7 Marks
		(OR)	
2	a)	What are the driving factors in Hardware/software co-design?	4 Marks
	b)	Write short notes on the following: i) RISC Architecture ii) VLIW Architecture	8 Marks

UNIT-II

3	a)	Give a note on architecture specialization techniques.	6 Marks
	b)	Explain shared memory communication in co-design.	6 Marks
		(OR)	
4	a)	What is the principle of emulation? Explain about prototype and emulation environment.	7 Marks
	b)	Explain about the system communication infrastructure.	5 Marks

UNIT-III

5	a)	Discuss about the architectural requirements of control dominated systems with an example.	6 Marks
	b)	Discuss about the system communication infrastructure.	6 Marks
		(OR)	
6		Explain about the architecture of ADSP21060 SHARC Data- dominated systems.	12 Marks

UNIT-IV

7	a)	Explain blocking versus non blocking operations.	5 Marks
	b)	Define concurrency and discuss different situations the concurrency abstraction covers.	7 Marks
		(OR)	
8	a)	Explain about implementation verification.	6 Marks
	b)	Explain about optimizations for embedded processors.	6 Marks

UNIT-V

9		Write short notes on the following :	
	a)	Basic concepts for multi language design.	6 Marks
	b)	Co-simulation models	6 Marks
		(OR)	
10	a)	Briefly explain about the Cosyma design flow.	6 Marks
	b)	Describe SYMTA-Symbolic timing analysis in the Cosyma system.	6 Marks

CODE No.:14MT26101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

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	a)	Explain the concept of Gradient and Mean square error.	6 Marks
	b)	Explain the concept of multiple adaptive linear combiner and its performance analysis	6 Marks
		(OR)	
2	a)	Explain the solution of Wiener - Hopf equation for linear traversal filter.	6 Marks
	b)	Explain the canonical form of the error performance surface.	6 Marks

UNIT-II

3	a)	Under what circumstances does one choose to use the method of Steepest-Descent algorithm over Wiener-Hopf equation to compute the filter coefficient? Explain.	4 Marks
	b)	What are the factors that affect the stability performance of the Steepest-Descent algorithm?	8 Marks
		(OR)	
4	a)	Can Wiener filter be viewed as a special case of the Kalman filter? Justify your answer.	6 Marks
	b)	Illustrate the Steepest-Descent algorithm by signal flow graph and determine the parameters that control its stability.	6 Marks

UNIT-III

5	a)	State and prove the properties of the transient behavior of the average mean squared error.	6 Marks
	b)	Derive the time evaluation of the weight error correlation matrix of the LMS algorithm.	6 Marks
		(OR)	
6		Obtain recursive relation for the weight error correlation matrix of the LMS algorithm. Discuss on the positive definiteness of it.	12 Marks

UNIT-IV

7	a)	State the Kalman filter algorithm for the scalar case. Derive the relationship between the Kalman Gain and the mean-square error.	8 Marks
	b)	What are the advantages of the Kalman filter over other filters?	4 Marks
		(OR)	
8	a)	Explain how a Kalman filter can be used for system identification.	4 Marks
	b)	Derive the expression for the Buss gang algorithm for blind equalization of base-band channel.	8 Marks

UNIT-V

9		Explain about QR decomposition based least square lattice filters.	12 Marks
		(OR)	
10		Describe about Adaptive forward linear prediction and adaptive backward	12 Marks

linear prediction with necessary equations.

CODE No.:14MT26102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC14) Regular Examinations October - 2015

SOFTWARE DEFINED RADIO

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the characteristics and benefits of software radio.	4 Marks
	b)	Describe transmitter architectures and their issues.	4 Marks
	c)	Discuss about ADC and DAC noise.	4 Marks
		(OR)	
2	a)	Briefly explain the design principles of software radio.	4 Marks
	b)	Justify how noise and distortion are limiting factors in the RF circuit performance.	4 Marks
	b)	Describe the enhanced flexibility of the RF chain with software radios.	4 Marks

UNIT-II

3		Explain the necessity of conversion of data streams sample rate in DSP and discuss sample rate conversion principles with examples.	12 Marks
		(OR)	
4		Discuss about;	
	a)	Polyphase filters.	6 Marks
	b)	Digital Filter banks.	6 Marks

UNIT-III

5	a)	Explain the band pass signal generation process in digital generation of signals.	6 Marks
	b)	Explain the approaches to direct digital synthesis. Mention its applications.	6 Marks
		(OR)	
6	a)	Describe analysis of spurious signals and spurious components due to periodic jitter.	6 Marks
	b)	What is random sequence? Explain the process of its generation.	6 Marks

UNIT-IV

7	a)	Explain different types of smart antenna algorithms and differentiate them.	8 Marks
	b)	Discuss about design process of simple smart antenna.	4 Marks
		(OR)	
8	a)	Discuss the role of DSP processors in SDR and mention its applications.	4 Marks
	b)	Describe the different types of digital hardware choices and compare them.	8 Marks

UNIT-V

9	a)	With the help of a diagram, explain about joint technical radio system.	8 Marks
	b)	Describe cognitive networking.	4 Marks
		(OR)	
10		Discuss and contrast the following case studies in SDR i) JTRS ii) SDR-3000 digital transreceiver subsystem	12 Marks

CODE No.:14MT26104 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

RADAR 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)	What is the basic principle of pulse radar? List out the various frequency bands along with frequency ranges that are used for radar applications.	6 Marks
	b)	A pulsed radar with a PRF of 1 KHz receives an echo pulse exactly 0.15 ms after it transmits. What should be the target range in Km? Also determine the maximum unambiguous range of the radar	6 Marks
		(OR)	
2	a)	Obtain the response characteristics and correlation function of a matched filter.	6 Marks
	b)	Show that the matched filter forms the cross correlation between the received signal Corrupted by noise and a replica of the transmitted signal.	6 Marks

UNIT-II

3	a)	Explain about I/Q detector in detail.	6 Marks
	b)	Explain the cell averaging CFAR receiver.	6 Marks
		(OR)	
4	a)	Describe the component parts in radar signal management with neat diagram and explain in detail each component.	7 Marks
	b)	Write about Lokelihood-Ratio receiver.	5 Marks

UNIT-III

5	a)	Explain in detail about Radar Ambiguity function and ambiguity diagram.	6 Marks
	b)	Represent ambiguity diagram for periodic pulse train.	6 Marks
		(OR)	
6	a)	Discuss in detail about surface clutter.	6 Marks
	b)	Explain about the detection of targets in clutter.	6 Marks

UNIT-IV

7	a)	Explain the capability of short-pulse and high range-resolution radar.	7 Marks
	b)	Explain the stretch techniques used in Radar signal.	5 Marks
		(OR)	
8	a)	Describe the decoding of FM waveform with block schematic and also explain the characteristics of passive system.	7 Marks
	b)	Write about SAW pulse Compression.	5 Marks

UNIT-V

9	a)	Explain the principles of Binary phase coding.	4 Marks
	b)	Explain the Maximum length sequences used for Radar Signal.	8 Marks
		(OR)	
10	a)	Describe the Non-linear FM pulse Compression.	6 Marks
	b)	Explain linear period modulation.	6 Marks

CODE No.:14MT26301 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

AD-HOC WIRELESS NETWORKS

[Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		What are the major issues to be considered for successful Adhoc wireless network.	12 Marks
		(OR)	
2	a)	Discuss design goals of MAC protocol for Adhoc wireless networks.	6 Marks
	b)	Explain contention based protocols with reservation mechanisms.	6 Marks

UNIT-II

3	a)	Write about operations in multicast routing protocol.	6 Marks
	b)	Explain about classification of routing protocol based on the routing information update mechanism.	6 Marks
		(OR)	
4	a)	Define location aided routing and temporally ordered routing algorithm.	6 Marks
	b)	Explain Fisheye state routing protocol.	6 Marks

UNIT-III

5	a)	Discuss the effects of multiple breaks on a single path at the TCP -F sender.	6 Marks
	b)	Explain Adhoc transport protocol. List major advantage and disadvantage.	6 Marks
		(OR)	
6	a)	What are the requirements of secure routing protocol for Adhoc wireless networks?	6 Marks
	b)	List the security flaws present in following type of routing; i) Table driven ii) on- demand	6 Marks

UNIT-IV

7	a)	What are the limitations of the IEEE 802.11 MAC protocol that prevents it from supporting QOS traffic.	6 Marks
	b)	What is cluster TDMA?	6 Marks
		(OR)	
8		Explain Asynchronous slot allocation strategies.	12 Marks

UNIT-V

9	a)	Explain the need for energy management in Adhoc wireless networks.	6 Marks
	b)	Suggest a few metrics that can be associated with battery aware routing techniques.	6 Marks
		(OR)	
10		Explain in detail about the system power management schemes.	12 Marks

CODE No.:14MT26302 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC14) Regular Examinations October - 2015

COMPUTER FORENSICS

[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		Define computer forensics. Explain the steps taken by for Computer forensics specialists.	12 Marks
		(OR)	
2	a)	List and explain the types of Military Computer Forensic Technology.	8 Marks
	b)	Write the benefits of professional forensics methodology.	4 Marks

UNIT-II

3	a)	Explain the process of collection and archiving of electronic evidence.	6 Marks
	b)	Write about E-mail Investigations.	6 Marks
		(OR)	
4	a)	Discuss about Incident and Incident response.	6 Marks
	b)	Write about forensic duplication.	6 Marks

UNIT-III

5	a)	Give a note on Validating Forensic Data.	6 Marks
	b)	Describe how Data is Acquired in Forensics Investigation.	6 Marks
		(OR)	
6		Explain the techniques for digital forensics analysis.	12 Marks

UNIT-IV

7	a)	Explain the acquisition procedure for mobile devices.	6 Marks
	b)	Discuss about the software forensic tools.	6 Marks
		(OR)	
8		Explain developing standard procedure for Network forensics.	12 Marks

UNIT-V

9		Explain in detail about Cyber law basics.	12 Marks
		(OR)	
10		Write about report writing for Investigations	12 Marks

CODE No.:14MT26303 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Regular Examinations October - 2015

INTRUSION DETECTION SYSTEMS

[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 are the differences between Intrusion and Extrusion detection?	4 Marks
	b)	Explain the Security Process with a neat diagram.	8 Marks
		(OR)	
2		Explain the Network Security Monitoring Techniques.	12 Marks

UNIT-II

3	a)	List and briefly explain about the traffic threat assessment assumptions.	8 Marks
	b)	What is PCI port aggregator tap? Discuss about its deployment.	4 Marks
		(OR)	
4		Draw the diagram of a sample enterprise network and explain about the common packet capturing methods.	12 Marks

UNIT-III

5		How to deal permanently with the intrusion after the intrusion incident is first Detected?	12 Marks
		(OR)	
6	a)	State the importance of traffic threat assessment.	6 Marks
	b)	What are the assumptions of traffic threat assessment?	6 Marks

UNIT-IV

7		What are the key issues one has to consider while collecting network traffic as evidence?	12 Marks
		(OR)	
8		How to maintain the integrity of Network Based Evidence?	12 Marks

UNIT-V

9	a)	Compare Anomaly based detection and Behavior based detection.	6 Marks
	b)	Brief the IPS monitoring activities.	6 Marks
		(OR)	
10		Explain in detail deploying and configuring IPS Devices and their applications.	12 Marks

CODE No.:14MT26306 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC14) Regular Examinations October - 2015

TCP/IP PROTOCOLS

[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 addressing? Explain three different levels of addresses used in an internet.	6 Marks
	b)	Compare and contrast LAN and WAN.	6 Marks
		(OR)	
2	a)	Differentiate subnetting and supernetting.	6 Marks
	b)	Explain the encapsulation of ARP packet.	6 Marks

UNIT-II

3	a)	Illustrate the process of IP fragmentation and reassembly in detail.	6 Marks
	b)	Explain source quench and echo request and reply ICMP messages.	6 Marks
		(OR)	
4	a)	Discuss in detail IP datagram with neat sketch.	6 Marks
	b)	Explain in detail IGMP operation.	6 Marks

UNIT-III

5	a)	Explain the taxonomy of common multicast protocols.	6 Marks
	b)	Explain how MBone uses the concept of tunnelling.	6 Marks
		(OR)	
6	a)	Summarize the features of multicasting and its applications.	6 Marks
	b)	What are Ad-hoc Networks? Explain their applications.	6 Marks

UNIT-IV

7	a)	Explain the format of an UDP datagram and how the checksum is computed.	6 Marks
	b)	How is congestion control done in TCP? Explain.	6 Marks
		(OR)	
8	a)	How is flow control accomplished in TCP? Explain in brief.	6 Marks
	b)	Why does FTP run on top of TCP rather than UDP? List the applications of UDP.	6 Marks

UNIT-V

9	a)	What is Bootstrap protocol? Explain the operation of Bootstrap protocol.	6 Marks
	b)	What is a name space? Explain in detail DNS messages.	6 Marks
		(OR)	
10	a)	What is option negotiation? Explain NVT character set for option negotiation.	6 Marks
	b)	What is Sorcerer's Apprentice Bug? Explain in detail.	6 Marks