CODE No.:10BT1BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Regular/Supplementary Examinations June - 2013

ENGINEERING PHYSICS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is space lattice? Explain with an example.
b) What are Miller Indices? Explain its significance.
c) State and explain Bragg's law.

2. a) State and explain the Heisenberg's uncertainty principle
b) Explain the behavior of an electron in a periodic potential.
c) Draw the energy-band structure for insulator, metal and semiconductor.

3. a) Write a short note on electrical conductivity in semi conductors.
b) With suitable examples, explain the direct and indirect band gap semiconductors.
c) Write the diode equation and explain the terms in it.

4. a) What are dia, para and ferro magnetic materials? Explain.
b) What is Clasius-Mossoti equation? Explain.
c) What is a dielectric constant?

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) What is Meissner effect? Explain.
b) A long superconducting wire produces a magnetic field of 200×10^3 amp/m on its surface due to current through it at temperature T. Its critical Magnetic field at 0^0 K is 250×10^3 amp/m. The critical temperature of the material is 12^0 K. Find the value of T.
c) Write the general properties of superconductors.

7. a) Explain different applications of optical fibers?
b) An optical fiber has NA of 0.20 and cladding refractive index of 1.59. Determine the acceptance angle for the fiber in water which has refractive index of 1.33
c) What is acceptance angle?

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

CODE No.:10BT1BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Regular/Supplementary Examinations June - 2013

ENGINEERING CHEMISTRY

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the functions of lubricants.
b) What are insulators? How are they classified?

2. a) What are conducting polymers? How are they classified? Give the important applications of conducting polymers.
b) Write a note on preparation, properties and applications of the following:
(i) Teflon (ii) Buna-N

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

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

5. Discuss in detail the applications of adsorption.

6. Discuss various applications of nanomaterials.

7. a) Explain Lambert-Beer's law equation and mention how absorption maximum varies in unsaturated organic compounds.
b) What is nuclear magnetic resonance? Explain clearly the shielding and de-shielding of protons with suitable examples.

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

CODE No.:10BT1BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Regular/Supplementary Examinations June - 2013

ENGINEERING MATHEMATICS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Solve $\frac{dz}{dx} + \frac{z}{x}\log z = \frac{z}{x}(\log z)^2$.

b) Radium disintegrates at a rate proportional to its mass. When mass is 10 mgm, the rate of disintegration is 0.051 mgm per day. How long will it take for the mass to be reduced to 10 to 5 mgm.

2. a) Find the complete solution of $y'' - 2y' + 2y = x + e^x \cos x$.

b) Solve the non-homogeneous ordinary differential equation $y'' + y = \sec x$ by the method of variation of parameters .

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

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

4. a) Find the centre of curvature at the point $\left(\frac{c}{4}, \frac{c}{4}\right)$ of the Curve $x^{\frac{1}{2}} + y^{\frac{1}{2}} = c^{\frac{1}{2}}$. Also find the equation of the circle of curvature at that point.

b) Find the envelope of the family of straight lines $y = mx + \frac{a}{m}$ for different values of m.

5. a) Find the Laplace transform of (i) $t\,e^{-t}\sin 3t$. (ii) $(e^{-at} - e^{-bt})/t$.

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

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

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

7. a) Evaluate $\iint xy\,dx\,dy$ over the positive quadrant of the circle $x^2+y^2= a^2$.

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

8. a) Find the values of a and b so that the surfaces $ax^2y+bz^3 = 4$ may cut the surface $5x^2 = 2yz+9x$ orthogonally at (1, -1,2).

b) Apply Green's theorem to evaluate $\int_C (2xy - x^2)dx + (x^2 + y^2)dy$ where C is the curve bounded by $y=x^2$ and $y^2=x$.

CODE No.:10BT1BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Regular/Supplementary Examinations June - 2013

MATHEMATICAL METHODS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define rank of a matrix. Find the rank of A by reducing to it's in normal form,

where $A = \begin{bmatrix} 1 & 2 & 3 & -2 \\ 2 & -2 & 1 & 3 \\ 3 & 0 & 4 & 1 \end{bmatrix}$

b) For which values of 'a' the following linear system has (i). No solution (ii). Unique solution (iii). Infinitely many solutions

$x + 2y - 3z = 4$, $3x - y + 5z = 2$, $4x + y + (a^2 - 14)z = a + 2$.

2. a) If λ is an eigen value of a non singular matrix A, then prove that $1/\lambda$ is the eigen value of A^{-1}.

b) Diagonalize the matrix $A = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 3 & -1 \\ 0 & -1 & 3 \end{pmatrix}$.

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 **Δ^n** f(x) is a constant.

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

x	5	6	9	11
y	12	13	14	16

5. a) From the following table, find x, correct to four decimal places, for which y is minimum and find this value of y.

x	0.60	0.65	0.70	0.75
y	0.6221	0.6155	0.6138	0.6170

b) Evaluate $\int_0^1 \sqrt{1 + x^4}\, dx$ using Simpson's $\frac{3}{8}$ rule.

6. a) Using Taylor's Series method. Solve the equation **$y^1 = x^2 + y^2$ for $x = 0.4$**, given that y(0) = 0, by taking h = 0.2.

b) Using Modified Euler's method find y(0.1), given that **$y^1 = x^2 + y$, $y(0) = 1$.**

7. a) Define a Fourier series and write the Dirichlet conditions for the expansion of f(x) as a Fourier series.

b) Find the Fourier transform of $f(x) = \begin{cases} 1 - x^2 & for \ |x| \le 1 \\ 0 & for \ |x| > 1 \end{cases}$

and hence evaluate $\int_0^{\infty} \left(\frac{x\cos x - \sin x}{x^3} \right) \cos\frac{x}{2} dx$

8. a) State and prove Initial value theorem for Z - transforms.

b) Find (i) $Z\{na^n\}$

(ii) $Z\{n^2 a^n\}$.

CODE No.:10BT1EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Regular/Supplementary Examinations June - 2013

PROBLEM SOLVING AND COMPUTER PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

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

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

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

4. a) Write a C program to print the reverse number of a given number.
b) Write a C program to retrieve the last "*n" bits* of a number and replace them with other "*n*" bits by using any bitwise operator (For example the last 3 bits of a number 32,765 is 5)

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

6. a) What is a user-defined function? What is recursion and write the advantages of recursion?
b) Write a C program which reads *n* students information into a file and sorts the records of the students based on the marks, resolve the ties by considering names of students.

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

8. a) Write a program to display the file contents.
b) Define Stack. Write push( ) and pop( ) routines of Stack.

CODE No.:10BT1HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Regular/Supplementary Examinations June - 2013

TECHNICAL ENGLISH

[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. Give a brief account of Visveswaraya's engineering feats and highlight his genius.

2. Trace the journey of Mother Teresa from Italy to Calcutta and her rise to the status of a spiritual leader of the world.

3. Write about Amarthya Sen's attachment towards his motherland.

4. Describe the steps taken by the Cuddalore district administration to ensure that potable water was available after the tsunami.

5. Describe the gradual rise and success of Nandan Nilekani in various fields.

6. Charles Chaplin is humor personified. Discuss.

7. a) Attempt an essay on the role of technology in societal development.
b) Write a letter to the principal of your college requesting him to take you on an industrial tour.

8. **a) Fill in the blanks with suitable prepositions:**
1. We have been waiting here _____ more than two hours.
2. He was killed _____ a knife.

b) Correct the errors in the following sentences:
1. Chiranjeevi is called as the Mega Star.
2. Raju is suffering with fever.

c) Choose the correct verb out of the two given in brackets:
1. Each of the boys (were, was) interviewed.
2. Neither Kishore nor Prasad (have, has) attended the meeting.

d) Fill in the blanks with appropriate article:
1. Rao is _____ uncle of mine.
2. He is _____ most popular actor.

e) Change the voice of the verbs in the following sentences:
1. Why was he arrested by the police?
2. You may create a new record.

f) Put the verbs in brackets into the present perfect tense:
1. The birds _____ back to Siberia. (fly)
2. The baby _____ to its mother. (cling)

g) Rewrite the following sentences in the Indirect speech:
1. Kalyan said, "I want to go to the US."
2. Padma said to Vishnu, "How will you save the mankind?"

CODE No.:10BT10101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Regular/Supplementary Examinations June - 2013

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between
(i) concurrent forces and non-concurrent forces.
(ii) like parallel force system and unlike parallel force system.
b) The resultant of the two forces, when they act at 60^0 is 14N. If the same forces are acting at right angles, their resultant is $\sqrt{136}$ N. Determine the magnitude of the two forces.

2. a) State and prove Varignon's theorem.
b) Four forces of magnitudes 10N, 20N, 30N and 40N are acting respectively along the four sides of a square ABCD as shown in Fig.1. Determine the magnitude, direction and position of the resultant force.

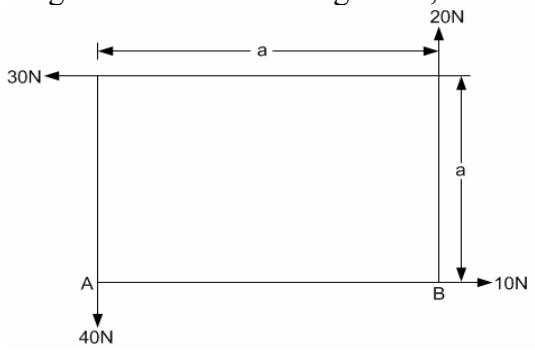

Fig.1

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

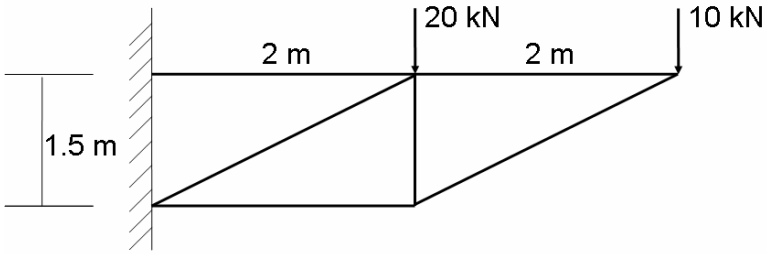

Fig. 2

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

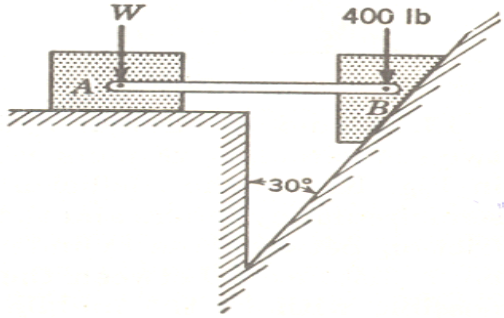

Fig. 3

5. a) Define

(i) Centroid

(ii) Centre of mass

(iii) Centre of gravity

b) Determine the centre of gravity of the plane uniform lamina shown in Fig. 4.

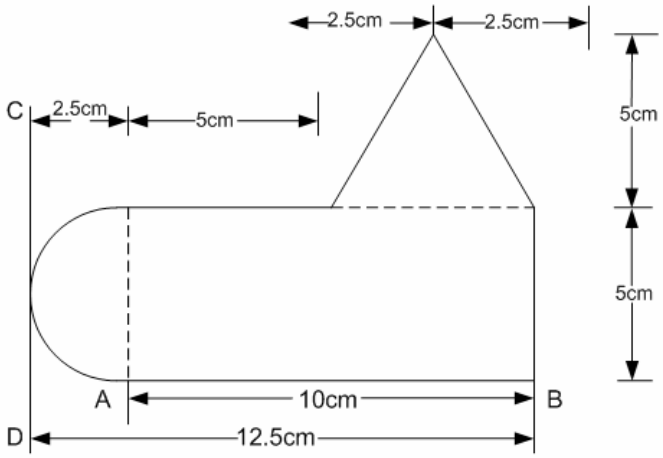

Fig.4

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

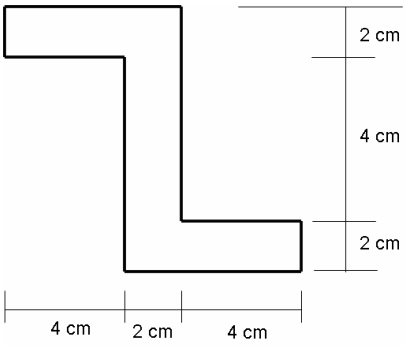

Fig. 5

7. a) Distinguish between

(i) resultant velocity and relative velocity.

(ii) acceleration and retardation.

b) A cricket ball thrown from a height of 1.8m at an angle of 30^0 with the horizontal with a speed of 18m/sec is caught by another field man at a height of 0.60m from the ground. How far apart are the two men ?

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) Supplementary Examinations December - 2012

PROBABILITY AND STATISTICS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Suppose 5 men out of 100 and 25 women out of 10,000 are color blind. A color blind person is choosen at random. What is the probability of the person being a male (Assume male and female to be in equal numbers)?

5) The cumulative distribution function of a continuous random variable X is given by

$$F(x) = \begin{cases} 0, & x < 0 \\ x^2, & 0 \le x < 1/2 \\ 1 - \frac{3}{25}(3-x)^2, & (1/2) \le x < 3 \\ 1, & x \ge 3 \end{cases}$$

Find the pdf of X and evaluate $P((1/3) \le X < 4)$.

2. a) 20% of items produced from a factory are defective. Find the probability that in a sample of 5 chosen at random (i) none is defective (ii) one is defective (iii)P(1<X<4)

5) If X is normally distributed with mean 6 and S.D=2.
Find i) P(0<X<12) ii)P(X<10) iii) $P(X \ge 10)$

3. a) For the data given below obtain rank correlation coefficient:

X	68	64	75	50	64	80	75	40	55	64
Y	62	58	68	45	81	60	68	48	50	70

5) The equations of the regression lines obtained in a correlation analysis are as follows: 3X+12Y=19, 3Y+9X=46 Obtain (i) Correlation coefficient (ii) The mean values of X and Y.

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 certain stimulus administered to each of the 12 patients resulting the following increase of Blood Pressure: 5, 2, 8, -1, 3, 0, -2, 1, 5, 0, 4 and 6. Can it be concluded that the stimulus will, in general, be accompanied by an increase in Blood Pressure?

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 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 the production firm of a company the breakdown of the machines is found to be Poisson with an average rate of 3 machines per hour. Breakdown time of one machine costs Rs 40 per hour to the company. There are two choices before the company for hiring the repairmen. One of the repairmen is low and cheap, other fast but expensive. The slow-cheap repairman demands Rs 20 per hour and will repair the break down machines exponentially at the rate of 4 per hour. The fast-expensive repairmen demands Rs 30 per hour and repair machines exponentially at an average rate of 6 per hour. Which repair man should be hired?

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

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) Discuss in detail the scope and importance of environment.
b) Write an essay on "Public awareness to protect our environment".

2. a) Explain the importance of forests in maintaining ecological balance and in providing economical and commercial services.
b) Describe various effects of over exploitation of ground water.

3. a) Write an essay on Forest Ecosystem.
b) Write the special features of Estuaries and Mangroves.

4. a) Classify types of Biodiversity and explain with examples.
b) What are hot spots of biodiversity? Which are the hot spots found in India? Explain their salient features.

5. Explain the following:
i) Floods; ii) Earth quake; iii) Tsunamis; iv) Cyclones

6. a) What is noise pollution? Discuss the sources and effects of noise pollution.
b) Explain the natural disasters.

7. Explain the occupational health hazards.

8. a) What are the various environmental aspects of grassland to be examined during field visit? Explain.
b) Brief about any two international conventions on environment.

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

OPTIMIZATION TECHNIQUES

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is the difference between linear and nonlinear programming problems?
b) What is separable programming problem?

2. a) Determine the extreme points of the function $f(x) = 12x^5 - 45x^4 + 40x^3 + 5$.
b) Using the Lagrangian multiplier method,
Minimize $f = k x^{-1} y^{-2}$; subject to $g = x^2 + y^2 - a^2$.

3. a) Solve the following system of equations using pivot operations:
$6x_1 - 2x_2 + 3x_3 = 11$, $4x_1 + 7x_2 + x_3 = 21$, $5x_1 + 8x_2 + 9x_3 = 48$
b) Maximize $f = 6x + 7xy$
Subject to $7x + 6y \le 42$, $5x + 9y \le 45$, $x - y \le 4$, $x \ge 0$, $y \ge 0$.

4. State various steps involved in the North-west corner rule and use it to obtain initial basic feasible solution to the following transportation problem.

	D	E	F	G	Available
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Requirement	200	225	275	250	

5. Consider the following problem:
Minimize $f(X) = 100(x_2 - x_1^2)^2 + (1 - x_1)^2$ and the starting point $X_1 = \begin{Bmatrix} -1 \\ 1 \end{Bmatrix}$. Find the minimum of $f(X)$ along the direction, $S_1 = \begin{Bmatrix} 4 \\ 0 \end{Bmatrix}$ using quadratic interpolation method. Use a maximum of two refits.

6. Minimize $f = 2x_1^2 + x_2^2$ from the starting point (1,2) using the univariate method (two iterations only)

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

8. a) Explain multi-stage decision process.
b) Solve the following linear programming problem by Dynamic programming:
Maximize $Z = 2x_1 + 3x_2$
Subject to $x_1 - x_2 \le 1$, $x_1 + x_2 \le 3$ and $x_1 \ge 0$, $x_2 \ge 0$.

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[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. Critically examine the role of production function in the analysis of a firm's production activities.

3. What is meant by Monopoly? Explain the profit/loss diagram in monopoly.

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

5. Journalize the following transactions and post them into the ledger. Also balance the accounts.

August 1, 2011	Ram commenced business with capital	Rs.1,60,000
Aug 4, 2011	Goods Purchased for cash	40,000
Aug 5, 2011	Goods sold for cash	30,000
Aug 6, 2011	Paid wages	4,000
Aug 7, 2011	Paid salaries	6,000
Aug 10,2011	Withdraw from bank for office use	15,000
Aug 15, 2011	Paid Municipal Taxes	4,000
Aug 19, 2011	Deposited into bank	7,500

6. Prepare the trial balance from the following drawn from the ledger of M/S Krishna Traders:

Name of the Account	**Amount (Rs.)**	**Name of the Account**	**Amount (Rs.)**
Opening Stock	20,000	Furniture	6,000
Purchase	85,000	Machinery	62,000
Purchase Returns	5,000	Debtors	36,000
Sales	1,60,000	Creditors	12,750
Sales Returns	6,200	Bills Receivables	4,600
Rent	1,200	Bills Payable	2,500
Salaries	5,700	Cash-in-hand	5,220
Advertisement	880	Bank Overdraft	10,000
Commission Received	1,440	Interest on Over draft	1,800
Discount Received	710	Capital	50,000
Drawings	7,800		

7. A project requires an initial investment of Rs.25,000 and is likely to generate the following cash flows:

Year	1	2	3
Cash Flows	Rs.10,000	15,000	17,000

Assume discount rate to be 10%. Compute Net Present Value (NPV) of the project.

8. Explain the features of Tally Accounting Package.

CODE No.:10BT40101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

STRUCTURAL ANALYSIS - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. The tensile stresses at a point across two mutually perpendicular planes are 150 N/mm^2 and 75 N/mm^2. Determine the normal, tangential and resultant stresses on a plane inclined at 30^0 to the axis of the minor stress.

2. a) When do you use Macaulay's method for determining the deflections and slopes of a beam? Give an example.
b) Determine the deflection and slope at the free end of a cantilever of span 6m, subjected to UDL of 3kN/m acting between the mid span and free end. Take EI=10^{4}kN.m^2.

3. a) State and prove Moment area theorem I.
b) Obtain expression for the end slopes and deflection at the mid span of a simply supported beam subjected to concentrated load at 1/3rd span. Use moment area theorems.

4. What are the assumptions made in the Euler's theory? Derive the Euler's critical load formula for long column with one end fixed and the other end free.

5. a) Derive expression for Distorsional strain energy per unit volume in terms three principal stresses.
b) Design the diameter of a circular shaft subjected to combined bending and twisting with bending moment of 10kN.m and twisting moment of 28kN.m. The safe stress in direct tension is 250 MPa and μ = 0.3.

6. a) Derive an expression for the crippling load of a column with one end fixed while the other end is free.
b) For what value of slenderness ratio of a square column will have same Euler's critical load and Rankines Critical load. Take E=200GPa and Yield stress of the material is 300MPa.

7. A cantilever AB of span 6 m is fixed at the end A and propped at the end B. It carries a point load of 60 kN at the mid span. Level of the prop is the same as that of the fixed end. Find the reaction at the prop. Also draw the Shear force and Bending moment diagrams.

8. A two span continuous beam ABC is 6 m long. The beam is simply supported at extreme ends A, C and is continuous over the support at B. Span AB is 3.6 m and has a point load of 4 kN at 1.8 m from the left support A. Span BC is 2.4 m and has a point load of 8 kN at 1.8 m from the right support C. Assuming EI as constant draw SFD and BMD.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

FLUID MECHANICS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define (i) Boundary layer thickness (ii) Displacement thickness and (iii) momentum thickness and give expressions for the same.
b) Explain boundary layer separation and indicate the methods of controlling separation.

2. a) Define the most economical section of an open channel. Derive the condition for maximum flow carried in a channel of trapezoidal section.
b) Find the diameter of a circular sewer pipe which is laid at a slope of 1 in 8000 and carrying a discharge of 0.8 m^3/s when flowing half full. Take Manning's N as 0.02.

3. a) Derive the differential equation for steady gradually varied flow in open channels and list the assumptions.
b) The discharge of water through a rectangular channel of width 6 m is 18 m^3/s when depth of flow of water is 2 m. Calculate (i) specific energy of the flowing water, (ii) Critical depth, Critical velocity and value of minimum specific energy.

4. a) Water is flowing through a pipe at the end of which a nozzle is fitted. The diameter of the nozzle is 100 mm and the head of water at the centre nozzle is 100 mm. 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 2.5 cm diameter, moving with a velocity of 10 m/sec, strikes a hinged square plate of weight 98.1 N at the centre of the plate. The plate is uniform thickness. Find the angle through which the plate will swing.

5. a) Explain i) Gross and Nett heads ii) Hydraulic and overall efficiencies of turbines. What is the practical application of specific speed concept of a turbine?
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) Define static and manometric head of a centrifugal pump, state the different types of head losses which may occur in a pump installation.

b) A centrifugal pump lifts water under a static head of 36 m of water of which 4m is suction lift. Suction and delivery pipes are both 15 cm in diameter. The head loss in suction pipe is 1.8 m and in delivery pipe 7 m. The impeller is 38 cm in diameter and 2.5 cm wide at mouth and revolves at 1200 rpm. Its exit blade angle is 35°. If the manometric efficiency of the pump is 82% determine the discharge and pressure at the suction and delivery branches of the pump.

8. a) A run-of-river plant with as installed capacity of 12000kW operates at 25% load factor when it serves as a peak load station. What should be the minimum discharge in the stream so that it may serve as the base load station? The plant efficiency may be taken as 85% when working under a head of 20m. Also calculate the maximum load factor of the plant when the discharge in the stream is $30 m^3$/sec.

b) A run-of-river plant is installed on a river having a minimum flow of 12 m^3/sec. If the plant is used as a peak load operating only for 6 hours a day, determine the firm capacity of the plant

(i) without pondage
(ii) with pondage

but allowing 10% of the water to be lost in evaporation and other losses. Head at the plant is 15 m and the plant efficiency may be assumed as 80%

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

REINFORCED CEMENT CONCRETE STRUCTURES - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Calculate the design constants for a balanced singly reinforced beam in working stress method when the permissible stresses in concrete and steel are 5 N/mm^2 and 230 N/mm^2 respectively.
b) The cross section of an R.C.C beam of rectangular section is to be designed to resist a B.M. of 65 kNm. Assuming the width of beam as half the effective depth, determine the dimensions of the beam and the area of tension reinforcement for the balanced section. Adopt M 20 grade concrete and Fe 415 grade steel.

2. a) Explain the characteristic load and the characteristic strength.
b) Draw the stress-strain curve for deformed steel bar and explain the salient points.
c) Explain the significance of limiting moment of resistance.

3. a) Explain the balanced section with reference to working stress method and limit state method.
b) An L-beam has 1000 mm wide and 100 mm thick flange, 350 mm wide web and 600 mm total depth. Design the steel reinforcement to resist a factored bending moment of 450 kNm. Use M 20 grade concrete and Fe 415 steel.

4. a) Explain the factors affecting the shear reinforcement of flexural members.
b) Design the shear reinforcement of a simply supported beam of span 4.8 m and cross-section 230 mm × 450 mm (overall depth) subjected to an imposed load of 25 kN/m. The beam is reinforced with 4-16 Ø. Use M 20 concrete and Fe 415 steel. Draw the reinforcement detailing.

5. A simply supported reinforced concrete beam of clear span of 7.6m has a cross section of size 200mm x 500mm effective depth. It is reinforced with 5 bars of 16mmø on the tension side. The beam carries a uniformly distributed service load of 20kN/m including its own weight. Determine (a) The length over which vertical stirrups are to be designed and their spacing and (b) Spacing of stirrups when 3 bars are bent up at the same section.

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 500mm x 500mm 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. Design a slab for a room of clear internal dimensions 3m x 5m supported on walls of 300 mm thickness, with corners held down. Two adjacent edges of the slab are continuous and other two discontinuous. Live load on the slab is 3 kN/m^2. Assume floor finish of 1 kN/m^2. Use M 20 grade concrete and Fe 415 grade steel. Sketch the details of reinforcement.

8. a) Describe the significance of serviceability limit state in the design of RC beams.
b) Check for deflection of a simply supported rectangular beam of effective span 8 m. The cross – section of the beam is 300 mm × 750 mm and is reinforced with 5-28 Ø in tension and 2-12 Ø as compression steel reinforcement. Adopt M 20 grade concrete and Fe 415 steel.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

CONSTRUCTION, PLANNING AND PROJECT MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between English and Flemish bonds and draw the plans for one and half brick wall for both odd and even courses.
b) What is a foundation and give classification of foundations according to Terzaghi ?

2. a) Explain in detail the different types of floors.
b) Explain the types of pitched roofs.

3. a) What are the causes and effects of Dampness ?
b) Explain the process of Distempering and White washing.

4. a) Enumerate the merits and demerits of different types of organizations.
b) Discuss about workmen's compensation act of 1923 and Minimum wages act of 1948.

5. a) Explain the objectives of Material Management and their costs.
b) Explain the Earth Moving equipment and Earth Compaction equipment.

6. a) What are the shortcomings of bar charts? How are these removed?
b) Distinguish between milestone chart and a bar chart. How can the milestone chart can be developed into a network?

7. a) Explain the Elements of Network.
b) Explain the planning for network construction.

8. From the data of table given, prepare the network diagram, decide the completion period and complete the critical path Method Schedule:

Activity Item	Duration in Days	Activities immediately	
		Preceding	Following
A	3	None	B,C
B	2	A	D,E
C	3	A	E
D	5	B	E
E	6	D,C	F,G
F	5	D,E	None
G	4	E	None

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

NETWORK ANALYSIS AND SYNTHESIS

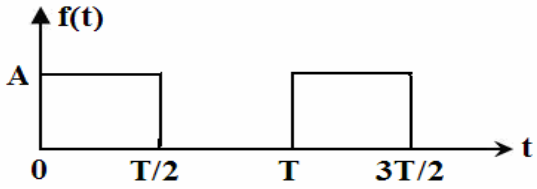
[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the terms Graph, Tree, and a Cutset of a network with suitable example.
b) Explain the method of obtaining Tie-set matrix of a network.

2. a) Find the Fourier series expansion of the following wave form.

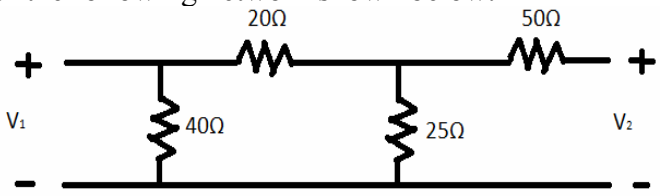


b) Find the RMS value of the current wave
$i(t) = 5 + 10\sin(\omega t+10) + 20\sin(3\omega t+20) + 30\sin(5\omega t+30)$

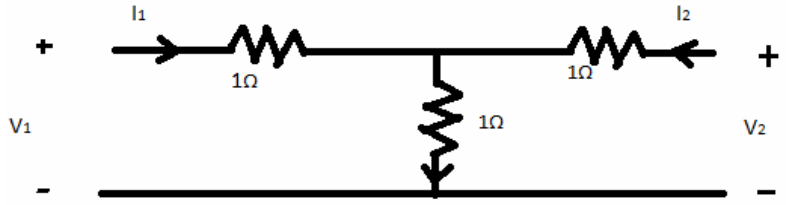
3. a) Write transforms impedances of the network elements R, L and C.
b) State initial and final value theorems, find the initial value of I, where

$$I(s) = 6.67\left[\frac{s+250}{s(s+166.7)}\right]$$

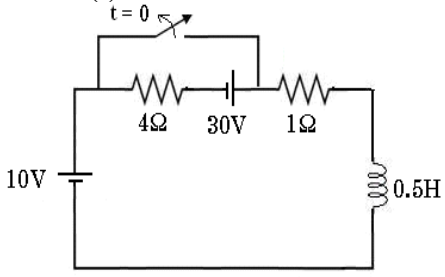
4. a) Find Z parameters for the following network shown below.



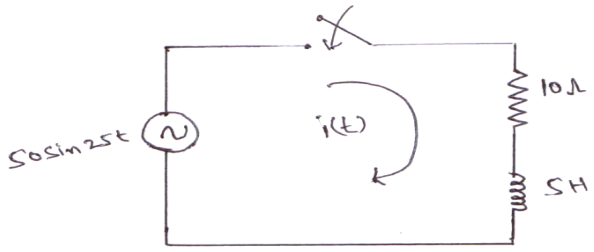
b) Estimate Transmission parameters (ABCD) for the following network.



5. a) Derive the equation for the transient current i(t) in a series RL circuit excited by a step input of V volts, at time t=0. Assume zero initial current in the inductor.
b) In the circuit shown below, the switch is initially in closed position for a long time and opened at time t=0. Find the current i(t) for t>0.

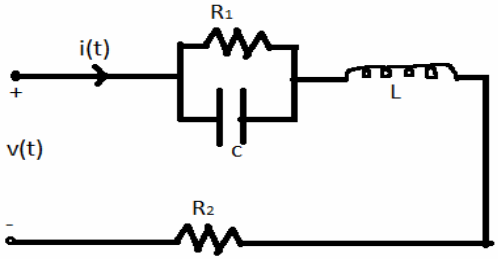


6. The circuit shown bellow figure consists of series RL circuit elements. The sin-wave is applied to the circuit when the switch is closed at t=0. Determine the current i(t).



7. a) Explain determinants and co-factors for determining network function.

b) Find $\frac{V_0(s)}{V_i(s)}$ for the network shown in figure below.



8. a) What are the properties of Positive Real Functions?

b) Realize the following RC impedance function in First Cauer form Z(S)=(S+1) (S+3) / S(S+2).

CODE No.:10BT40202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

ELECTRO MAGNETIC FIELDS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the expression for the electric field intensity due to an infinite line charge.
b) Derive the expression for the energy density in electrostatic field.

2. a) Define potential gradient. Derive the relationship between $\overline{E}$ and V.
b) Find the electric potential at the point at which $\overline{E}$ is zero, when point charges of 4 μC and 8 μC are located at (0,0,0) and (0.5, 0,0) respectively.

3. a) A total charge of 50 nC is uniformly distributed over a circular disc lying in *xy* plane with its centre at at origin. Find the potential at point (0,0,6) m.
b) Explain in detail about polarization effects induced in dielectric due to static electric field.

4. a) Derive an expression for field intensity due to a solenoid current carrying wire.
b) Determine the magnetic field intensity at the origin due to a current element $6\pi\ \overline{a}_z$ μ A/m at the point (3, -6, 0) in free space.

5. 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) Derive the Lorentz force equation.
b) Explain about the classification of magnetic materials.

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. Apply Gausses law to the differential Volume element and derive the expression for divergence in Cartesian coordinate system.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

GENERATION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Give the overview of non-conventional energy sources.
b) What are the requirements of a electric power system?

2. a) How do you classify hydro-electric power plants?
b) Why governor is necessary for hydraulic turbines?

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

4. Compare the relative merits and demerits of various power stations.

5. a) Compare radial and ring main type of distribution systems.
b) What are the limitations of kelvin's law?

6. Discuss in detail about various types of bus bar arrangements in substations.

7. a) Discuss the various methods of determining the depreciation of an equipment.
b) A 100 MW power station delivers 100 MW for 2 hour, 75 MW for 6 hour and is shut down for the rest of each day. It is also shut down for maintenance for 20 days each year. Calculate its annual load factor.

8. a) Why a consumer having low power factor is charged at higher rates?
b) A consumer has an average demand of 400 KW at a p.f. of 0.8 (lag) and annual load factor of 60%. The tariff is Rs. 100/- per KVA of maximum demand per annum plus 120 paise per KWH. If the p.f. is improved to 0.95 (lag) by installing phase advancing equipment Calculate
i) the capacity of the phase advancing equipment
ii) the annual saving effected
The phase advancing equipment costs Rs. 150 per KVAR and the annual interest and depreciation together amount to 10%.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

ELECTRICAL MEASUREMENTS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the principle, construction and working of a PMMC instrument.
b) Explain the significance of controlling torque and damping torque relevant to the operation of indicating instruments.

2. a) Explain the Construction and working of Moving Iron Attraction type instrument.
b) Explain the Characteristics of Current Transformer.

3. a) What is the need for a synchroscope in a power station? Explain with a diagram the construction and working of a moving iron type synchroscope.
b) Power input to a 3-phase 415 V, 50 Hz induction motor is measured using two wattmeters. It was observed that one wattmeter reads 7.5 KW while the other reads 2.5 KW after reversing the connections of pressure coil. Calculate:
i) Total power ii) Power factor iii) Line current.
Also identify which watt meter was reading 2.5 KW if it is given that two wattmeters were connected in lines R and Y.

4. a) Explain about the construction and operation of an Induction type single phase energy meter.
b) The constant of a 230V, 50 Hz single phase energy meter is 185 revolutions per KWH. The meter takes 190 seconds for 10 revolutions while supplying a non inductive load of 4.5 A at normal voltage. What is the percentage error of the instrument?

5. a) Explain the working of DC Crompton's potentiometer with help of diagram.
b) Explain the working of AC polar type potentiometer with help of neat diagram.

6. a) Explain about the measurement of earth resistance using meggar.
b) In a Kelvin Double bridge, there is error due to mismatch between the ratios of outer and inner arm resistances. The following is the data related to the bridge: Standard resistance =100.03Ω; Inner ratio arms=100.31Ω and 200Ω; Outer ratio arms=100.24Ω and 200Ω. The resistance of connecting leads from standard to unknown resistor is 680μΩ. Calculate the unknown resistance.

7. a) Explain about the measurement of Inductance using Andersons bridge
b) Find the series equivalent inductance and resistance of the network that causes an opposite angle to null the following in Hays bridge arms:
ω = 3000 rad/sec; R_1 = 1.8kΩ; R_2 = 9kΩ; C_1 = 0.9μF; R_3 = 0.9kΩ.

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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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

TRANSFORMERS AND INDUCTION MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operation of a single phase transformer on load with the help of phasor diagrams.
b) What are the types of transformers? Explain the constructional details of shell type transformers.

2. a) Define the voltage regulation of a transformer. Deduce the expression for the voltage regulation.
b) A single phase transformer has 400 primary and 1000 secondary turns. Net cross-sectional area of the core is 60 cm^2. If the primary winding be connected to a 50 Hz supply at 520V. Calculate i) The peak value of flux density in the core ii) Voltage induced in the secondary winding.

3. a) Explain how OC test and SC tests will be conducted on a single phase transformer.
b) What is an auto transformer? Explain.

4. a) Explain the working of scott connected transformers with phasor diagram.
b) Describe the poly phase transformers connections with suitable diagrams.

5. a) Explain the principle of operation of 3 - phase induction motor with neat sketches.
b) Show that the maximum internal torque developed by a poly phase induction motor does not depend on the rotor circuit resistance and explain the torque slip characteristics.

6. a) Determine the rotor emf and reactance under running conditions.
b) A 6 pole induction motor is fed from 3 - phase, 50 Hz supply. If the frequency of rotor emf at full load is 2 Hz. Find full load slip and speed.

7. Draw the circle diagram for a 3 - phase 6 poles, 50 Hz, 400 V, star connected induction motor from the following data (line values).
No load test : 400 V, 10 A, 1400 Watts
Blocked rotor test : 200 V, 55 A, 7000 Watts.
The Stator losses at standstill is 60% of the total copper losses and full load current is 30A.
From the circle diagram determine i) power factor, slip, output, efficiency, speed
ii) starting torque iii) maximum power output and inputs iv) maximum torque and slip.

8. Discuss various speed control methods of 3 - phase induction motor.

CODE No.:10BT40221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

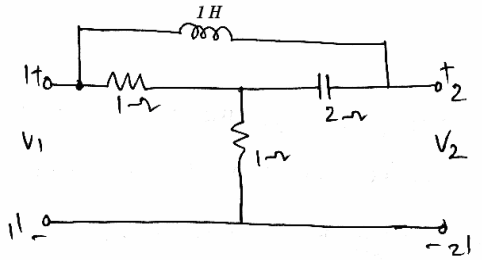
PRINCIPLES OF ELECTRICAL ENGINEERING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Find the relationship between z and h parameters.
b) For the following network shown in figure below determine Y and Z parameters.



2. a) Explain in detail about constant - k high pass filter.
b) Design m-derived low pass filter having cut off frequency of 1khz, design impedance of 400 Ω and resonant frequency 1100hz.

3. Design a ∏ - attenuator pad to give an attenuation of 20 dB. The characteristic resistance is 500 Ω.

4. a) Explain different types of DC machines.
b) Explain the various losses in DC machines.

5. a) Explain the significance of phase sequence in three phase systems.
b) A 400v, 3-φ balanced supply is fed to a star connected three phase load which has a resistance of 8 ohms and a capacitive reactance of 10 ohms in each phase.
i) Find the line current, total volt-amperes, active and reactive power.
ii) Draw the phasor diagram showing phase voltages, line voltages and currents.

6. a) Derive the EMF equation of transformer.
b) A 15 KVA 2400/240 V , 60 hz transformer has a magnetic core of 50 cm^2 cross section and a mean length of 66.7 cm. The application of 2400 causes magnetic field intensity of 450 AT/m (RMS) and a maximum flux density of 1.5 T. Determine
i) The turns ratio
ii) The numbers of turns in each winding.

7. a) Explain about the production of rotating magnetic field in a 3 -Phase system
b) The power input to the rotor of 440V,50 hz , 6 Pole , 3-Phase induction motor is 80KW. The EMF is observed to make 100 complete alterations per minute. Calculate (i) Slip (ii) the rotor speed.

8. Explain the principle of operation of (i) Shaded pole motor (ii) A.C. Servo motor.

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CODE No.:10BT40401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

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) Justify the statement CE parameters in terms of CB parameters are obtained by interchanging the subscripts 'b' and 'e' in h - parameters.
b) Explain the classification of amplifiers.

2. What are high input resistance amplifiers circuits? Explain and analyze any one circuit with neat circuit diagram and equivalent circuits.

3. Explain the parameters of hybrid - π model with neat equivalent circuits.

4. Draw the circuit of Common Gate MOSFET amplifier with resistive load, then with the help of small signal model analyze the circuit.

5. a) Compare various characteristics of negative feedback amplifiers.
b) For voltage series feedback with a neat structure derive the expression for input and output resistances with feed back.
c) A Voltage series negative feedback amplifier has a voltage gain without feedback of A= 500,input resistance 3 k ohm and output resistance is 20 k ohm and feedback ratio is 0.01. Calculate R_{if} and R_{of}..

6. a) What are the merits and demerits of Phase shift Oscillator?
b) Derive the expression for frequency of oscillations and minimum gain required for sustained oscillations of RC phase shift Oscillator.

7. a) Compare voltage amplifiers to power amplifiers.
b) What is cross over distortion? How can it be eliminated in case of a transformer coupled class- B push pull power amplifier? Explain with a neat circuit diagram.

8. a) What is the effect of cascading double tuned amplifiers on bandwidth?
b) A single tuned amplifier using a FET has a tank circuit components L= 100mH; R=5 ohm; C=100P F. The FET used has rd=500 k ohm and gm=5mA/V. Find voltage Gain at resistive load and Bandwidth
c) If the non-linear distortion in a negative feedback amplifier with an open loop gain of 100 is reduced from 40% to 10%with feedback, compute the feedback factor β of the amplifier.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

PULSE AND DIGITAL CIRCUITS

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

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

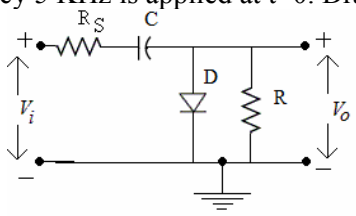
Answer any FIVE questions
All questions carry equal marks

1. a) A symmetrical square wave of peak-to-peak amplitude **V** and frequency *f* is applied to a high pass RC circuit. Derive the expression for percentage tilt.

b) A symmetrical square wave whose peak-to-peak amplitude is 2V and whose average value is zero is applied to an RC integrating circuit. The time constant is half the period of the square wave. Find the peak-to-peak value of the output amplitude.

2. a) State and prove clamping circuit theorem.

b) In the clamping circuit, $R_s = R_f = 50$ ohms, R=20 k and C=2 μF. A Symmetrical square wave signal of amplitude 20V and frequency 5 KHz is applied at t=0. Draw the first three cycles of the output waveform.



3. a) Explain with relevant diagrams the various transistor switching times.

b) Design a transistor switch with the following specifications.
V_{CC}=10 V; V_{BB}= 6 V; I_C (sat) = 8 mA; (h_{FE}) min = 30.

4. Draw the free running collector coupled multivibrator circuit and explain its operation with wave forms at both collectors and bases. Why it is called Voltage-to-frequency converter?

5. What are the features of a time-base signal and explain how sweep signal can be generated using exponential sweep circuit?

6. a) Discuss the applications of sampling gates.
b) Draw the circuit diagram of a four-diode sampling gate and explain its operation.

7. a) Explain the synchronization of a sweep circuit with symmetrical signals.
b) Explain the stability of relaxation dividers.

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) Supplementary Examinations December - 2012

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) Explain the terms polarization & dielectric constant with reference to dielectric materials.
b) Four point charges of 0.2μC each are placed at the corners of a plane rectangle of sides 10cm and 15cm. Determine the total force on any one of the charge.

2. a) Show that the capacitance of parallel wires is given by $c = \frac{\pi E}{In\left[\frac{d}{(r]}\right)} = \frac{F}{m}$, where d is distance between the wires and r is radius of each conducting wire
b) Derive Possion's and Laplace's equations from fundamentals.

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) Can time varying magnetic field exist within a conductor? Explain?
b) If the magnetic flux density B=20 *sin* ωt, *for* $r < 2$ and $B = 0$ *for* $r>2$. Calculate induced Electric field intensity for $r < 2$ and $r > 2$.

5. a) Calculate the attenuation constant and phase constant for a uniform plane wave with frequency of 10 GHz in a medium for which $\mu = \mu_0$ and $\epsilon_r = 2.3$ and $\sigma = 2.56 \times 10^{-4}$ mho per meter.
b) Derive the expressions for the attenuation constant, phase constant and the intrinsic impedance for a uniform plane wave in a good conductor.

6. a) Discuss about Brewster angle, total internal reflection and surface impedance.
b) The electric field of a plane wave is given by $E = 5\sin((10^8)t - 4x)\bar{a}_x$. Determine direction of propagation, f, β and λ.

7. a) Derive the equations of the attenuation constant, phase constant of the transmission line in terms of line constants R, L, C and G.
b) Derive the equations for the input and the transfer impedance of the transmission lines.

8. a) Explain the transmission of TE waves between parallel perfectly conducting plane with necessary expressions and diagrams of the field components.
b) A TEM wave at 1 MHz propagates in the region between conducting plane which is filled with dielectric material of $\mu_r = 1$ and $\epsilon_r = 2$. Find the phase constant and characteristic wave impedance.

CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

SWITCHING THEORY & 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) Why the binary number system is used in computer design?
b) For the binary numbers
a=1010.1; b=101.0; c=1001.1
Perform the following
i) a+b; ii)a-b iii) a.c iv)a/b

3. Minimize the expression using Quine McCluskey method
Y=A'BC'D'+A'BC'D+ABC'D'+ABC'D+AB'C'D+A'B'CD'

4. a) What is priority encoder and explain its operation with truth table?
b) Implement the following Boolean function with a multiplexer.
$F(A, B, C, D) = \sum (0, 1, 3, 4, 8, 9, 15)$

5. a) Compare PROM, PLA & PAL.
b) Design BCD to excess-3 code converter and implement using suitable PLA.

6. Explain and design asynchronous MOD10 counter.

7. A sequential circuit has two JK flip-flops A and B, two inputs x and y, and one output z. The flip-flop input equations, circuit output equations are
$J_A=Bx+B'y'$; $J_B= A'x$; $K_A= B'xy'$; $K_B=A+xy'$; $z=Ax'y'+Bx'y'$
a) Draw the logic diagram of the circuit.
b) Tabulate the state table.
c) Derive the state equations for A and B.

8. a) What is the difference between conventional Flow chart and ASM chart and give the notations used in an ASM chart.
b) Draw a circuit of implementation a control with three D flip flops, a decoder and Gates.
c) Explain the Interaction between control and data processor.

CODE No.:10BT40421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Show that the exact expression for h_{fe} in terms of CB hybrid parameters is

$$h_{fe}\frac{-h_{fe}(1-h_{rb})+h_{ib}h_{ob}}{(1+h_{fb})(1-h_{rb})+h_{ib}h_{ob}}$$

b) From this exact formula, obtain the approximate expression for h_{fb}.

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) List out five characteristics of an amplifier which are modified by negative feedback and discuss them briefly.
b) For an n-channel FET amplifier with source resistance 'R', draw circuit diagram without feedback but including the loading of 'R'. Determine its output resistance R_{of} by using small signal low frequency model. What type of negative feedback amplifier is this?

4. a) Draw the circuit diagram of a RC phase shift oscillator using BJT. Derive the expression for frequency of Oscillations.
b) A Crystal has L= 2 H, C=0.01 Pf And R= 2kΩ .Its Mounting capacitance is 2 pf. Calculate its series and parallel resonating frequency.

5. a) Determine the power handling capacity of a 60W power transistor rated at 25°C if derating is required above 25 °C at a case temperature of 100 °C. The derating factor is 0.25W/°C.
b) Derive the expression for efficiency in case of a transformer coupled class - A power amplifier.

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 ±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. a) Explain the phenomenon of latching in a transistor.
b) Define the following for a transistor switch
i) Rise time ii) Fall time
iii) Storage time iv) Delay time.

8. a) Explain the operation of Schmitt trigger with circuit diagram and waveforms. Define UTP and LTP.
b) Draw the circuit of a bistable multivibrator with symmetrical collector triggering and explain it.

CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

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) Explain the functional Components of a Computer.
b) Explain the BCD adder with help of a neat sketch and by a taking an example.

2. a) What are the different types of Shift operations? How to implement a Shifter?
b) Convert 4*5+6*7 into Postfix and evaluate using Stack.

3. Explain the design of micro program sequencer with logic truth table.

4. a) Explain 4-segment instruction pipeline with a neat sketch.
b) What are the advantages of memory interleaving?

5. a) Write short notes on RAID.
b) Explain about performance considerations in memory system.

6. Discuss in detail about IOP.

7. Explain about inter processor communication and synchronization.

8. a) What are the characteristics of RISC?
b) Explain Overlapped Register Windows of RISC.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

OBJECT ORIENTED PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain briefly the main concepts of object-oriented programming.
b) What are constructor and destructor functions? Explain different types of constructors?

2. a) What are the different forms of inheritance? Give an example for each type.
b) Create an abstract base class Shape with two members Base and Height, a member function for initialization and a pure virtual function to compute area ( ). Derive two specific classes Triangle and Rectangle which override the function area ( ). Use these classes in a main function and display the area of a Triangle and a Rectangle.

3. a) Write a Java class Point to represent a two dimensional point (x, y). Extend it to a class circle with its centre as the point and an additional radius member and extend further to a class cylinder with additional height member.
b) Explain the concept of nested classes in Java with a suitable example.

4. a) Explain the inheritance mechanism in JAVA with example.
b) Differentiate classes and interfaces in JAVA.

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

6. a) Develop a program to illustrate how multi thread operation is done?
b) What does extending a thread mean? Explain by means of a program.

7. a) What is the purpose of a layout manager in Java? Explain the different layout managers available in java with example(for any one layout).
b) Describe the AWT event hierarchy and explain event handling with examples.

8. a) Write short notes on
i) JFrame
ii) JClass
b) Using java swing create any front end for hotel registration.

CODE No.:10BT40503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

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 steps in Compilation process?
b) What does it mean a program to be reliable?
c) What do you mean by imperative programming language?

2. a) What do you mean by associative array and what are its design issues?
b) Define fully qualified and elliptical references to fields in records.

3. a) Discuss in detail overloaded operators.
b) State your own arguments for and against allowing mixed-mode arithmetic expressions.
c) What is coercion?

4. Discuss the following and compare the merits and demerits of each.
Call-by-Value.
Call-by-reference.
Call-by-name.
Call-by-Value results.

5. a) Explain the concept of multithreading in JAVA.
b) Write a note on objects in Smalltalk.

6. a) How can an exception be explicitly raised in Ada?
b) What is the difference between a C++ throw specification and a Java throws clause?

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

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 - 2012

ELECTRICAL & ELECTRONIC MEASUREMENTS

[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 the Permanent Magnet Moving Coil (PMMC) meter with relevant sketch and the necessary equations.
b) Write a detailed note on Moving Iron instruments.

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 Wattmeter with necessary diagrams.
b) Explain in detail about Single Phase Induction Energy Meter with torque equations and necessary diagrams.

4. a) In a Kelvin's double bridge, there is error due to mismatch between the ratios of outer and inner are resistances. The bridge has following values:
Standard resistance = 100.03μΩ ; Inner ratio arms = 100.31μΩ and 200μΩ;
Outer ratio arms = 100.24μΩ and 200μΩ.
The resistance of the connecting leads from standard to unknown resistance is 700μΩ.
Calculate the unknown resistance under this condition.
b) Explain about the Hay's bridge. Write the necessary balancing equations.

5. a) Explain the working of AC Voltmeter using Rectifiers with necessary circuit diagrams.
b) Draw the block diagram of a Successive Approximation DVM and explain its operation.

6. a) Briefly discuss about the errors in digital frequency meters.
b) Briefly discuss about the wave meters and frequency selective wave analyzers.

7. a) Describe the construction and working of a Storage Oscilloscope with necessary diagrams.
b) Draw the block diagram of Vertical Amplifier used in a CRO and explain its working.

8. a) Describe the operation of an X-Y recorder with a neat diagram. Also list its applications.
b) Explain the working of a Fourier Transform Spectrum Analyzer with a neat diagram.

CODE No.:10BT41002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

TRANSDUCERS IN INSTRUMENTATION

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the generalized block diagram of measuring system with an example.
b) What is transducer? Give classification of transducer with an example.

2. a) Define the following:
i) Accuracy ii) Precision iii) Resolution iv) Threshold
b) Explain the second order measurement system and its response to ramp input

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) Discuss in detail about magnetostrictive transducers.
b) Discuss the working of Variable reluctance transducers.

5. a) Explain the working of differential dielectric transducers.
b) Derive the expression to find capacitance for a differential gap between the conducting plates.

6. a) Explain the construction, working and applications of force balance transducer.
b) Explain the construction, working and applications of Photovoltaic transducer.

7. a) Explain how the reactance will be measured using Push - pull bridge.
b) Explain low drift amplifier.

8. a) Write short notes on nanosensors.
b) Explain the construction and working of ultrasonic transducer.

CODE No.:10BT41201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

DATA COMMUNICATIONS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the concept of network architecture in communications.
b) Define the terms:
1) Bit rate. 2) Information capacity M-ary encoding.
3) Describe coherent binary FSK.

2. a) List and describe the four primary constants of a transmission line.
b) List and describe the various types of coupling loss associated with optical fibres.

3. a) 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 rays and wavefronts and the relation between them.
b) Explain the inverse square law and how it relates to electromagnetic waves.
c) List and describe the three forms of satellite multiple access arrangements.

5. a) List all transmission parameters of telephony and also give the importance of each parameter along with its mathematical representation of the parameter.
b) Explain in detail the operation and characteristics of paging systems.

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 character synchronization and explain the differences between asynchronous and synchronous data formats.
b) For a 12-bit data string of 101100010010, determine the number of hamming bits required, arbitrarily place the Hamming bits into the data string, determine the logic condition of each Hamming bit, assume an arbitrary single - bit transmission error, and prove that the Hamming code will successfully detect the error.

8. a) Describe the three blocks of an asynchronous voice-band modem.
b) Define probability error and Bit rate.

CODE No.:10BT41221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

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 different input devices.
b) Compare advantage and disadvantages of three dimensional monitor using *varifocal* mirror with a stereoscopic system.

2. a) Write and explain DDA line algorithm.
b) Write an algorithm to scan convert the interior of a specified ellipse into a solid color.

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. Explain the following
a) Cohen-Sutherland Line Clipping
b) Multiple Windowing

5. a) Show that n^{th} degree B-Spline basis function B_i, $n(x) = 0$, if $x < t_1$ or $x > t_i+n-i$.
b) A triangle having vertices at (0,0), (1,1) and (5,2) is rotated by 45 degree clockwise (i) about origin and ii) about P(-1, -1) point. Obtain the coordinates of the vertices of the triangle using homogenous coordinate system.

6. a) Explain multimedia storage and retrieval system.
b) Explain multimedia systems architecture.

7. a) What are the advantages and disadvantages of lossless compression? Compare and contrast these with lossy compression schemes.
b) How does the video animation differ from full-motion video?

8. a) Explain about Integrated Multimedia Message standards.
b) Explain the concept of Hypermedia messaging.

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

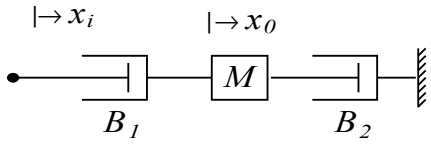
CONTROL SYSTEMS

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

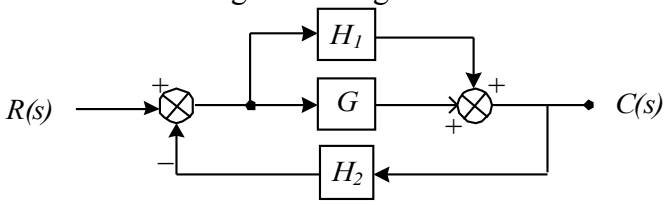
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the general control systems problem.
b) Draw the free body diagram and develop differential equation.



2. a) Explain how a transfer function can be obtained using Mason's gain formulae.
b) Obtain transfer function of the following block diagram.



3.
a) The open loop transfer function of a unity feedback system is $G(s) = \frac{12}{s(s+8)}$. Find the rise time, percentage overshoot, peak time and settling time for a step input of 15 units.
b) Sketch the response of the second order system
i) Under-damped system. ii) Un-damped system.
iii) Critically damped system. iv) Over-damped system.

4. a) Explain RH criterion.
b) Draw Root locus if $G(s).H(s)\ is\ \frac{K(s+3)}{(s+2)}; 0 < k < \infty$.

5. Obtain the bode plot for the transfer function $G(s) = \frac{2}{(s+1)^2(s+16)}$. From the bode plot, obtain phase margin and gain margin.

6. a) How gain margin and phase margin can be obtained using polar plots.
b) Draw the Myquist plot if the unity FB system is given as, $\frac{50}{s(s+5)}$. (The system is represented by open loop transfer function)

7. a) Determine the transfer function of a lead compensator that will provide a phase lead of 50^0 and gain of 8dB at ω=5rad/sec.
b) Explain the Lag compensator design briefly.

8. a) Define the terms state variable and state trajectory.
b) Derive an expression to obtain state transition matrix of a system.

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CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the differences between Big-O notation and Little-o notation? Explain with suitable examples.
b) Derive the time complexity of the below pseudocode:

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

2. a) Write difference between BFS and DFS.
b) Explain the BFS algorithm with an example.

3. Describe the design paradigm Dynamical Programming. Which problem does it address? In which situation it be used?

4. a) Explain the general method of greedy algorithms? What are its properties? Does greedy approach works always? Also write the advantages and disadvantages of greedy method.
b) Write notes on optimal storage on tapes.

5. a) Write a pseudo code for a linear time algorithm that generates the optimal Binary Search Tree from the root table.
b) Find the minimum number of operations required for the following chain matrix multiplication using dynamic programming.
A(30,40) * B(40,5) * C(5,15) * D(15,6).

6. Write the procedure of backtracking approach to solve a problem with the help of graph colouring problem.

7. a) Explain the general method of Branch and Bound.
b) Explain the principles of LIFO Branch and Bound.

8. a) State and Explain Cook's theorem.
b) Write a short note on nondeterministic algorithms.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

MICRO-PROCESSOR AND INTERFACING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is memory segmentation? Explain different memory segments of 8086 microprocessor.
b) Explain different data definition assembler directives of 8086 microprocessor.

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

3. a) Draw a block diagram to interface two 16K X 8 SRAM (62128) to the 16-bit data bus of 8086 based system. Design the address decoder for the address range from 00000H - 07FFFFH for both the SRAMs.
b) Explain the need for a DMA controller 8257. Draw and explain the timing diagram of a DMA operation.

4. Write an ALP to interface a hex keyboard to 8086 using 8255 and draw the interfacing diagram.

5. a) Explain the interrupt programming in 8086.
b) Briefly explain the interfacing of 8259A with 8086.

6. a) Briefly explain about TTL to RS 232C and RS 232C to TTL conversion.
b) Discuss briefly about the methods of Data Communication.

7. a) Explain the enhanced instruction set of 80386.
b) What are the differences between 80386 microprocessor and 80286 microprocessor?

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) Supplementary Examinations December - 2012

OPERATING SYSTEMS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Detail on the objectives and functions of an OS.
b) Write notes on the various system calls.

2. a) Detail on the process state transition with a neat diagram.
b) Write about 3 common types of threading Implementation.

3. a) What is synchronization? Explain how semaphores can be used to deal with *n* process critical section problem.
b) Write notes on Reader - Writers' problem and the dining philosophers problem.

4. Write in detail about deadlock detection and recovery.

5. a) Given memory partition of 100KB, 500KB, 200KB and 600KB (in order). Show with neat sketch how would each of the first fit, best fit and worst fit algorithms place processes of 412KB, 317KB, 112KB and 326KB (in order) which algorithm is most efficient in memory allocation?
b) Explain about thrashing with example.

6. a) Explain the two - level directory and three level structured directory.
b) Give short notes on UNIX file system and Windows file system.

7. Write in detail about different disk scheduling algorithms.

8. a) Explain the principles of protection.
b) Explain about security problem and program threat.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2012

THEORY OF COMPUTATION

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State the properties of transition functions, and prove that for any transition function δ and for any two input string x and y δ(q,xy)= δ (δ (q,x),y).

b) Construct a Deterministic finite automaton equivalent to M=($\{q_1,q_2,q_3\}$,{0,1},δ,q_1,$\{q_3\}$), where δ is given in the table.

STATE DIAGRAM :

State/Σ	A	b
→q_0	q_0,q_1	q_0
q_1	q_2	q_1
q_2	q_3	q_3
*q_3		q_2

2. Construct a DFA for the following statements.
"Each*a* followed by zero or more number of *b's* continued with or without *a* or *b*".
"Zero or more number of *a* or *b* followed by *a* and *b* which may or may not ended with *b*".

3. a) State the steps to convert a regular expression to NFA with an example.

b) Describe, in the English language, the sets represented by the following regular expressions:
   a) a(a+b)*ab
   b) a*b + b*a

4. a) Explain about the application of regular expression.

b) Narrate the laws of Identities and annihilators.

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. Construct PDA's that recognizes the languages:
a) L1={$a^n b^n$:n≥1} b)L2={x∈{a,b}*:$|x|_a$=$|x|_b$}.

7. Find the following decision problems with unrestricted grammars are solvable not explain your answer in detail:
i) Given a grammar 'G' ,and a string 'W',does 'G' generate W or not?
ii) Give two grammars G_1 and G_2 .Do they generate the same language or not?

8. a) Draw the model of UTM and give it's formal definition. Does deterministic TM is equivalent to non-deterministic TM? How?

b) "Travelling salesman problem is NF-complete"-yes or no? Justify your answer.

❀ ❀ ❀

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

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 Baye's Theorem.

b) Companies B_1, B_2, B_3 produce 30%, 45% and 25% of the cars respectively. It is known that 2%, 3%, and 2% of the cars produced from B_1, B_2 and B_3 are defective.

i) What the probability that a car purchased is defective?

ii) If a car purchased is found to be defective what the probability that this car is produced by company B_3?

2. a) If a Poisson distribution is such that $P(X = 1)\frac{3}{2} = P(X = 3)$

find (i) $P(X \geq 1)$ (ii) $P(X \leq 3)$ (iii) $P(2 \leq X \leq 5)$.

b) Define Normal Distribution and find its mean and variance.

3. a) Calculate the coefficient of correlation for ranks from the following data.

X	5	10	6	3	19	5	6	12	8	2	10	19
Y	8	3	2	9	12	3	17	18	22	12	17	20

b) Find (i) the least square regression line of y on x and (ii) the least square regression line of x on y for the following data.

Mass of father X	65	63	67	64	68	62	70	66	68	67	69	71
Mass of sonY	68	66	68	65	69	66	68	65	71	67	68	70

4. a) A population consists of 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 the mean, standard deviation and standard error of means.

b) Explain type-I and type-II erros with suitable examples. What are degrees of freedom?

5. a) A random sample of 100 recorded deaths in the united states during the past year showed an average life span of 71.8 years. Assuming a population standard deviation of 8.9 years, does this seem to indicate that the mean life span today is greater than 70 years? Use a 0.05 level of significance.

b) In two large populations there are 30% and 25% respectively of fair-haired people. Is this difference likely to be hidden in samples of 1200 and 900 respectively from the two populations? Use a 0.05 Level of significance.

6. a) A test of the breaking strengths of 6 ropes manufactured by a company showed a mean breaking strength of 7750 lb and a strength deviation of 145 lb, whereas the manufacturer claimed a mean breaking strength of 8000 lb. Can we support the manufacturer's claim at a level of significance of 0.01?

b) In experiments on pea breeding, the following frequencies of seeds were obtained:

Round and yellow	Wrinkled and yellow	Round and green	Wrinkled and green	Total
315	101	108	32	556

Theory predicts that the frequencies should be in proportions 9**:**3**:**3**:**1. Examine the correspondence between theory and experiment. Use a 0.01 level of significance.

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

i) average queue length
ii) expected idle time of the cashier
iii) expected time a new arrival spends in the system
iv) expected waiting time of a new arrival before his service is started
v) probability that a person has to spend for at least 10 minutes in the system.

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

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) Write an essay on biosphere.
b) Explain in detail about role of important national and international individuals and organizations in promoting environmentalism.

2. a) Write a short note on biogas, nuclear energy and solar energy.
b) Explain briefly about water resources, water use, over exploitation and conflicts over water.

3. a) Define ecosystem and explain briefly about producers, consumers and decomposers.
b) Explain in detail about ecological successions.

4. a) What is MAB (man and biosphere)? Discuss.
b) What are the various strategies of Ex-situ conservation?

5. a) Write a short note on floods, earthquakes and tsunamis.
b) Write an essay on soil pollution.

6. a) Discuss various methods of rainwater harvesting.
b) How green power saves this planet? Illustrate with suitable examples.

7. a) Assess the success rates of Montreal protocol and Kyoto protocol.
b) Discuss the role of human rights in environmental protection.

8. a) Explain the role of individuals in preventing pollution.
b) AIDS threat is now diminishing. Substantiate this statement.

CODE No.:10BT3BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Form the PDE by eliminating the arbitrary constants from $z = ax + by + a^2 + b^2$.

b) Solve the equation $x^2 \frac{\partial u}{\partial x} + y^2 \frac{\partial u}{\partial y} = 0$.

2. a) Show that $\beta(m,n) = \frac{\Gamma(m)\Gamma(n)}{\Gamma(m+n)}$.

b) Show that $e^{\frac{1}{2}x\left(t-\frac{1}{t}\right)} = \sum_{n=-\infty}^{\infty} t^n J_n(x)$.

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

b) If *f(z)* is a holomorphic function of *z*; then show that $\left[\frac{\partial}{\partial x}|f(z)|\right]^2 + \left[\frac{\partial}{\partial x}|f(z)|\right]^2 = |f'(z)|^2$.

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) Evaluate $\oint_C \frac{z+4}{z^2+2z+5}dz$ where C: $|z+1-i| = 2$ by residue theorem.

b) Show that $\int_0^{2\pi} \frac{\cos 2\theta}{1-2a\cos\theta+a^2}d\theta = \frac{2\pi a^2}{1-a^2}$, ($a^2 < 1$) using contour integration.

7. a) State and Prove Rouche's theorem.

b) A Bilinear transformation preserves cross ratio of four points.

8. a) Show that the image of the hyperbola $x^2 - y^2 = 1$ is the lemniscate $\rho^2 = \cos 2\phi$.

b) Find the transformation which maps the points -1, i, 1 of the z-plane onto 1, i, -1 of the w-plane respectively.

CODE No.:10BT3BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

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

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

2.

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

b) Verify Cayley-Hamilton theorem, for the matrix $\begin{bmatrix} 7 & 2 & -2 \\ -6 & -1 & 2 \\ 6 & 2 & -1 \end{bmatrix}$.

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

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

x	0	2	4
y	5.1	10	31.1

4. a) Prove the following with the usual notations

i) $\Delta = \frac{1}{2}\delta^2 + \delta\sqrt{\frac{\delta^2}{4}} = 0$ ii) $\Delta^3 y_2 = \nabla^3 y_5$.

b) Express the function $\frac{x^2 + 6x - 1}{(x^2 - 1)(x - 4)(x - 6)}$ as a sum of partial fraction by using Lagrange's method.

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

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

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

6. Give that $y' + y = 2e^x$ with y(0) = 2. First, find the starting values by Taylor's series method by taking h = 0.1 and then find y(0.4) by Milne's method.

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

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

8. a) Expand $f(x)= x$ as a cosine series in the interval $0 \le x \le \pi$ an hence deduce that

$$1+ \frac{1}{3^2}+ \frac{1}{5^2}+ \frac{1}{7^2}+ - - - - = \frac{\pi^2}{8}.$$

b) Is the function $f(x) = \begin{cases} 1+ \frac{2x}{\pi}\ ; & -\pi \le x \le 0 \\ 1- \frac{2x}{\pi}\ ; & 0 \le x \le \pi \end{cases}$ even or odd? Expand f(x) as a Fourier series.

CODE No.:10BT30101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

MECHANICS OF SOLIDS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define (i) Modulus of Elasticity (ii) Modulus of rigidity (iii) Bulk modulus and write the relation among them.

b) The following data refer to a mild steel specimens tested in a laboratory
Diameter of the specimen=25mm
Length=300mm
Extension under a load of 15kN=0.045mm
Load at yield point=127.65kN
Maximum load=208.6kN
Length of the specimen at failure=375mm
Neck diameter=17.75mm
Estimate (i) Young's Modulus (ii) Yield point (iii) Ultimate stress (iv) Percentage elongation (v) Safe stress , Using factor of safety 2.

2. Draw the shear force and bending moment diagrams for a simply supported beam of span 5 m subjected to the loading as shown in Fig. 1.

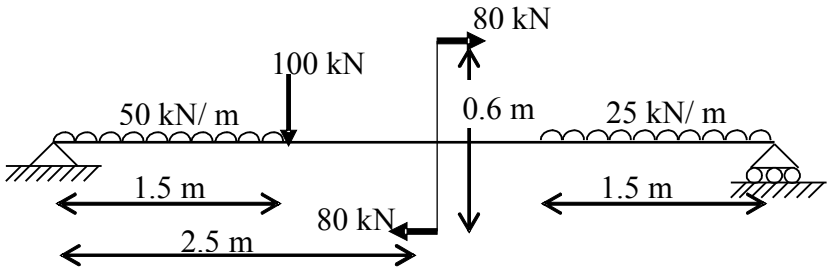

Fig. 1

3. a) A rectangular beam section 300mmx 600mm, is subjected to a sagging moment producing a max bending stress of 9Mpa 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 q_{max}/q_{ave}..

4. A hollow shaft of diameter ratio 3/8 is to transmit 375kW at 100rpm, the maximum torque being 20% greater than the mean. If the shear stress not to exceed 60 N/mm2 and the twist in a length of 4m is not to exceed 2 degrees, then calculate the internal and external diameters which would satisfy both the above conditions. Shear modulus is $C=8.5X10^4$ N/mm2.

5. a) Why are hollow shafts recommended for transmitting heavy torques?

b) Two shafts of the same material and of the same lengths are subjected to the same torque. If the first shaft is of solid circular section and the second shaft is of hollow section whose internal diameter is two-third of the outer diameter, compare the weights of two shafts.

6. a) What is core of a section? Obtain the same for a square cross section.
b) A hollow rectangular short column of outer dimensions 200mm x 100mm and inner dimensions 100mm x 50mm is subjected to an axial load of 50kN. Base of the column is fixed. A horizontal load of 5kN act at the top of column. The line of action of this lateral load passes through the minor principal axis. Determine the maximum and minimum stresses developed at the base of the column. Length of the column is 3m.

7. a) Derive expressions for the hoop stress and longitudinal stress of a thin cylinder subjected to internal fluid pressure.
b) A copper tube of 60 mm inner diameter, 1200 mm long and 1.2mm thick has closed ends and filled with water under pressure. Neglecting any distortion in the end plates, determine the alteration in pressure when an additional volume of 5 cc of water is pumped in to the tube. E_C = 100 GPa, μ_C = 0.3, K_w=2Gpa.

8. A cylindrical shell 1.2m long, 200mm internal diameter and 10mm thick is filled with a fluid at atmospheric pressure. If an additional 3 X 10^4 mm^3 of the fluid is pumped into the cylinder, and the pressure exerted by the fluid on the wall of the cylinder. Find also the hoop stress induced. Take E=200Gpa and μ =0.3.

CODE No.:10BT30102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

BUILDING MATERIALS AND CONCRETE TECHNOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the various atmospheric and external agencies which are responsible for the deterioration of stones.
b) Explain the different tests on bricks to find its suitability for the construction work.

2. a) Discuss low quality and high quality refractory materials.
b) How is natural hydraulic lime manufactured?

3. a) Explain the mechanical treatment of timber.
b) Write short notes on Distempers and Bituminous wooden products in construction.

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

5. a) Explain the various tests to find the workability of concrete.
b) Explain the strength of concrete under fatigue and impact.

6. a) Write short notes on
i) curing of hardened concrete
ii) Maturity concept
b) Explain the need and advantages of non-destructive testing.

7. Write short notes on : a) Types of shrinkage
b) Factors influencing creep.

8. a) Explain the following:
(i) Light weight concrete
(ii) No-fines concrete
b) What is HPC? Describe the classification of HPC.

CODE No.:10BT30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

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) State Kirchoff's Voltage law (KVL) and Kirchoff's current law (KCL) with an example.
b) Derive an expression for determining the equivalent capacitance of two series connected capacitors C1 and C2
c) State and explain ohm's law.

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) Deduce the EMF equation of single phase transformer
b) The no-load test is conducted on a single phase transformer. The following test data are obtained: Primary voltage V_1=230V, secondary voltage V_2=115V
Primary current I_0 =0.6A, power input W_0 =32W
Resistance of the primary winding R_1 = 0.5Ω
Find the following: i) Turns ratio
ii) The Magnetizing component of No-load current
iii) Its working (or) loss component
iv) Iron loss
Draw the no-load phasor diagram to scale.

4. a) Describe the types and constructional details of induction Motor
b) A 3-phase induction motor is wound for 4 poles and is supplied from 50 Hz systems. Calculate (i) the synchronous speed, (ii) the speed of the motor when slip is 4% and (iii) the rotor current frequency when the motor runs at 600 r.p.m.

PART - B

5. a) With neat sketch describe the working of gas welding.
b) What are the applications of soldering? And discuss any two soldering methods.

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

7. a) Explain the working principle of vapour absorption system with a sketch.
b) Write five desirable properties of a refrigerant.

8. a) Discuss the working principle of multi stage reciprocating air compressor
b) Write short notes on:
(i) Belt conveyors.
(ii) Bucket 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 - 2012

SURVEYING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the various points to be followed while recording entries in a field book. Give a neat sketch of a page of the field book.
b) Explain the principle of chain surveying. Describe the situation where it can be used.

2. Five chain lines form a regular pentagon. If the bearing of one line is 42°30′, find the bearings of the remaining lines.

3. a) What is a contour line? Explain the uses of contours.
b) The following readings have been taken from a page of an old level book. It is required to reconstruct the page. Fill up the missing quantities and apply the checks.

Station	B.S.	I.S.	F.S.	Rise	Fall	R.L.	Remarks
1	3.125					?	B.M
2	?		?	1.325		125.505	T.P.
3		2.320			0.055		
4		?				125.850	
5	?		2.655				T.P.
6	1.620		3.205		2.615		T.P.
7		3.625					
8			?			123.090	T.B.M.

4. The following perpendicular offsets were taken at 10 m intervals from a survey line to an irregular boundary line.

3.25, 5.60, 4.20, 6.65, 8.75, 6.20, 3.25, 4.20, 5.65 m.

Calculate the area enclosed between the survey line, the irregular boundary line, and the first and last offsets, using (i) average ordinate rule, (ii) trapezoidal rule, and (iii) Simpson's rule.

5. What is a "Gale's traverse table"? Where is it used? Draw a traverse table and give the procedure of calculations in steps.

6. The following observations were taken with a tacheometer located at B on vertically held staff at A and C.

Instrument station	Staff station	Staff readings (m)	Vertical angle	Horizontal circle readings
B	A	0.920, 1.865, 2.810	$+ 5^0\ 20'$	$0^0\ 0'\ 0''$
B	C	1.800, 2.275, 2.75	$- 6^0\ 40'$	$140^0\ 30'$

Calculate the gradient of the line AC. The constants of the tacheometer are 100 and zero.

7. Two straights AV and VC meet in an inaccessible point V and are to be connected by a simple circular curve of 550 m radius. Two points P and Q were selected on AV and VC respectively and the following data were obtained:

Angle APQ = 150^0; Angle BQP = 160^0; Distance of PQ = 150 m.

Make the necessary calculations for setting out the curve by the method of tangential angles. Take a unit chord of 30 m length.

8. Explain the following:
(i) Electronic distance meter.
(ii) Total station.
(iii) Geographic information system.

CODE No.:10BT30105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

FLUID MECHANICS-I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain briefly the following :
i) Surface tension ii) Compressibility
b) What is capillarity? Derive expression for height of capillary rise.
c) If 5.27m^3 of a certain oil weighs 44KN, calculate the specific weight, mass density and specific gravity of oil.

2. A 5*m* wide tank with an L-shaped cross section, as shown in Figure 1, has a gate which is hinged at the top at it right hand end. If the tank is filled with water to a level of 8*m* determine the torque required at the hinge to just keep the gate closed.

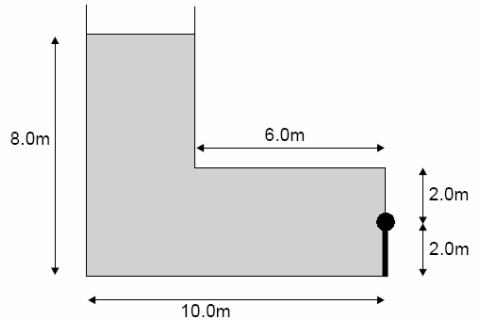

Figure 1

3. a) Show from basic principles that the continuity equation for one dimensional steady compressible flow is given by $\frac{d\rho}{\rho} + \frac{dV}{V} + \frac{dA}{A} = 0$
b) The stream function for a two dimensional plane flow is given by $\Psi = 2xy$. Determine the velocity potential function if it exists.

4. a) A pipe line carrying oil (sp. gravity 0.87) changes in diameter from 200 mm at position A to 500 mm at position B, which is 4 m at a higher level. If the pressure at A and B are 100 kPa and 60 kPa respectively and the discharge is 0.2 m^3/s, determine (i) loss of head and (ii) direction of flow.
b) A 300 mm diameter pipe carries water under a head of 20 m with a velocity of 3.5 m/s. If the axis of the pipe turns through 45^o, find the magnitude and direction of the resultant force on the bend.

5. Two reservoirs with a difference of water level of 60 m are connected by a 200 mm diameter, 500 m long pipe with the following nonuniformities:
Sharp entrance (k = 0.50)
Sudden contraction to 100 mm diameter pipe
Sudden expansion to 200 mm diameter pipe (100 m after the contraction)
A bend with loss coefficient k = 0.80
A globe valve fully open (k = 10)
Exit loss
If the pipe friction factor is 0.015 for both 100 mm and 200 mm pipes, determine the pipe discharge.

6. a) Obtain an expression for discharge of a liquid through a Venturimeter.
b) A tank has two identical orifices in one of its vertical sides. The upper orifice is 4m below the water surface and lower one 6m below the water surface. If the value of coefficient of velocity for each orifice is 0.98, find the point of intersection of the two jets.

7. a) A discharge of 10 l/s per meter width of oil of relative density 0.80 and dynamic viscosity 0.98 Ns/m^2 flow between parallel plates with a spacing of 40 mm. What should be the inclination of the plates with the horizontal so that the flow takes place at constant pressure?
b) The velocity along the centre line of a 150mm diameter pipe conveying oil under laminar flow conditions is 3m/s. The viscosity of the oil is 1.2 poises and its specific gravity is 0.9. Obtain (i) the quantity of oil flowing in l/s and (ii) the shear stress at the pipe wall in N/m^2. Also verify that the flow is laminar.

8. a) State Buckingham's π theorem. Why this theorem is superior over the Rayleigh's method for dimensional analysis?
b) The frictional torque T of a disc of diameter D rotating at speed N in a fluid of viscosity μ and density ρ in a turbulent flow is given by $T = D^5 N^2 \rho \varphi [\mu / D^2 N \rho]$. Prove this by the method of dimensions.

CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

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 terms:
i) Dynamic viscosity and ii) Kinematic viscosity. Give their dimensions.
b) A pipe containing water at 172 KN/m^2 pressure is connected by a differential gage to another pipe 1.5m lower than the first pipe and containing water at high pressure. If the difference in heights of the two mercury columns of the gage is equal 75mm, what is the pressure in the lower pipe? Specific gravity of mercury is 136.6.

2. a) Derive from basis principles the continuity equation for one-dimensional flow.
b) A 45^o reducing bend is connected in pipeline, the diameters at the inlet and outlet of the bend being 400 mm and 200 mm respectively. Find the force exerted by water on the bend if the intensity of pressure at inlet of the bend is 215.8 kN/ m^2. The rate of flow is 0.5 m^3/ s.

3. a) What are 'minor losses' in pipe flow? List the various minor losses and give the expressions for the minor losses.
b) Derive an expression for measuring the discharge of fluid through a pipe line, using a venturimeter.

4. a) Show that the efficiency of a free jet striking normally on a series of flat plates mounted on the periphery of a wheel never exceeds 50%.
b) A jet of water 50mm 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 are the types of power plants? Explain the working of a pumped storage plant.
b) Explain the following terms :
(i) Gross head (ii) Net head (iii) Hydraulic efficiency and
(iv) Overall efficiency of a turbine.

6. a) What is a hydraulic turbine? Explain the classification of hydraulic turbines.
b) With the help of a neat diagram explain the construction and working of a Pelton wheel turbine.

7. a) Derive the expression for specific speed of a turbine.
b) What is cavitation and what is its significance in hydraulic turbines?

8. a) Explain briefly the following efficiencies of a centrifugal pump:
(i) manometric efficiency
(ii) mechanical efficiency and
(iii) overall efficiency
b) What is specific speed of a centrifugal pump? Derive an expression for the specific speed of a centrifugal pump.

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CODE No.:10BT30201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

ELECTRICAL CIRCUITS

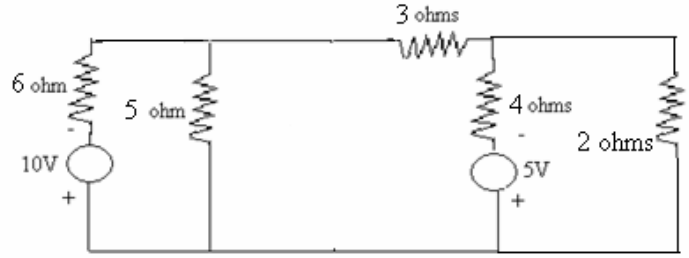
[Electrical and Electronics Engineering]

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

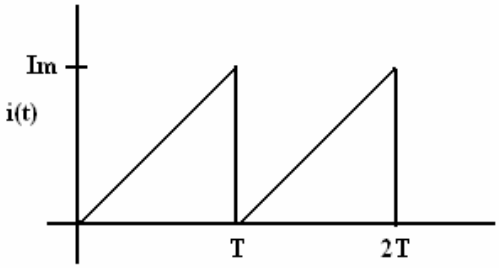
Answer any FIVE questions
All questions carry equal marks

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

2. a) Define (i) Node (ii) Path (iii) Loop (iv) Branch
b) By using nodal analysis find the current flowing through 3 ohms resistor.



3. a) Find form factor of triangular waveform shown in the below figure.



b) A 50 Hz sinusoidal voltage wave shape has maximum value of 350 V. calculate its instantaneous value 0.005 sec after the wave passes through zero in the positive direction.

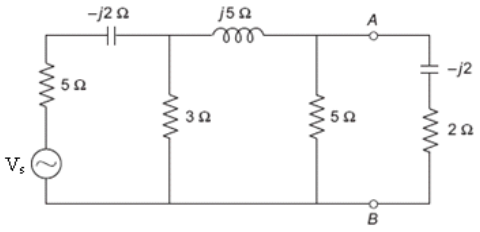
4. a) Derive the resonance frequency of series circuit in terms of half power frequencies
b) A voltage of $200\angle 45^0$ volts is applied to the parallel combination of two branches. The currents in the branches are $20\angle 65^0$ A and $40\angle 30^0$ A. Find the following
i) Branch impedance and its components
ii) Total impedance and its components
iii) Total admittance
iv) Power factor of the combined circuit

5. a) Obtain the relationship between the phase and line quantities of a 3 phase balanced star connected system.
b) Three impedances Z_A=10Ω, Z_B= j10Ω and Z_C= -j10Ω are connected in Star across a three phase, 4 wire, 440 Volts, ABC system. Determine the line currents, current in the neutral wire and the total power.

6. a) What is an electric circuit? What is a magnetic circuit? Make a comparison between electric circuit and magnetic circuit.

b) An iron ring of mean circumference of 1 m is uniformly wound with 400 turns of wire. When a current of 1.2 A is passed through the coil, a flux density of 1.15 Wb/m^2 is produced in the iron. Find the relative permeability of the iron under these circumstances.

7. For the network shown in below figure, replace the circuit to the left of terminals 'AB' with the Thevenin equivalent. Then determine the current in the (2-j2) ohms impedance connected to the equivalent circuit



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

b) State and explain Reciprocity theorem.

CODE No.:10BT30202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

DC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the principle of energy conversion of electromechanical system.
b) What are the significances of energy and co-energy of energy conversion system?

2. a) Explain the various losses in a dc generator and mention the methods to reduce them.
b) Derive an EMF equation of a dc generator.

3. a) What are causes for failure of self excitation and list out the remedial measures?
b) A 50Kw 250V dc shunt generator has a field circuit resistance of 60 ohms and an armature resistance of 0.02 ohms. Calculate (i) the load current, field current and armature current and (b) the generated armature voltage, when delivering rated current at rated speed and voltage.

4. a) Explain the concept of armature reaction and its effects with respect to dc generator.
b) Determine the equations for demagnetizing and cross magnetizing Amp-Turns/Pole.

5. Six dc generators are running in parallel, each having an armature resistance of 0.15Ω running at the same speed and excited to give equal induced emf(s). All generators share load equally at a terminal voltage of 500V. The total load is 360 KW. If the field current of one generator is raised by 5% and the speed remains constant, calculate (i) new terminal voltage (ii) output of each machine.

6. a) Draw speed-torque characteristics of (i) dc shunt motor (ii) dc series motor (iii) dc cumulatively compound motor. Mention one industrial application of each of these motors.
b) A 4-pole dc shunt motor has a flux per pole of 0.04wb and the armature is lap wound with 720 conductors. The shunt field resistance is 240Ω and the armature resistance is 0.2Ω. Brush contact drop is 1V per brush. Determine the speed of the machine when running (i) as a motor taking 60A (ii) as a generator supplying 120A. The terminal voltage in each case is 480V.

7. a) Explain with a sketch the working of a 3-point starter used for D.C shunt motors.
b) A 220V, 1.5kW, 859 rpm, separately excited dc motor has armature resistance of 2.5 ohms it draws a current of 8A at rated load condition. If the field current and the armature voltage are fixed at the value of rated speed at rated load, what will be the no load speed of the motor? Assume losses remain constant between no load and full load operation.

8. Explain briefly Hopkinson's test for determination of efficiency of dc shunt machines. What are the advantages and limitations of this test?

CODE No.:10BT30221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

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. Find the resistance between the points B and C of the circuit shown bellow fig .1.

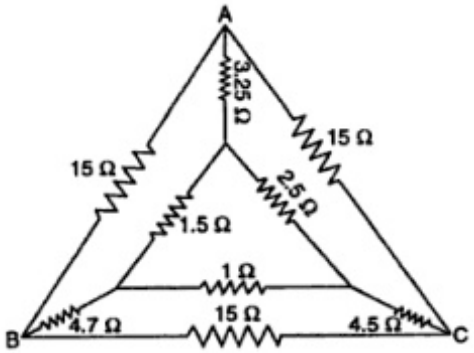


Fig.1,

2. Define and prove Maximum power transfer theorem.

3. A capacitance of 20μF and a resistance of 100 Ω are connected in series across 120 V, 60 Hz mains. Determine the current, impedance and average power extended in the circuit.

4. a) What are the advantages of 'Delta-connected' three phase system?
b) Three similar coils each having a resistance of 20 Ω and an inductance of 0.05H are connected in delta to a 3-phase, 50Hz, 400 V supply. Calculate
(i) Line current,
(ii) Power Factor and
(iii) Total volt-amperes.

5. a) What are the types of Self-excited DC generator?
b) What are the characteristics of DC shunt motor? Give its applications.

6. a) Give brief constructional details of an Induction Motor.
b) Explain Open-Circuit and Short-Circuit tests of a single-phase transformer.

7. Explain the operation of (i) AC Servomotor and (ii) Stepper motor.

8. a) Explain the construction and working of a permanent moving coil instrument.
b) With the help of a neat sketch explain the construction and operation of attraction type moving iron instrument.

CODE No.:10BT30222

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

FOUNDATIONS OF ELECTRICAL ENGINEERING

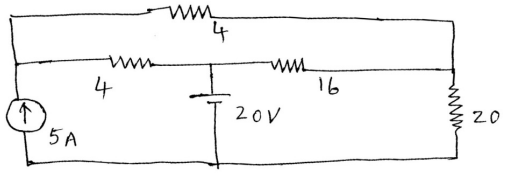
[Computer Science and Systems Engineering]

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

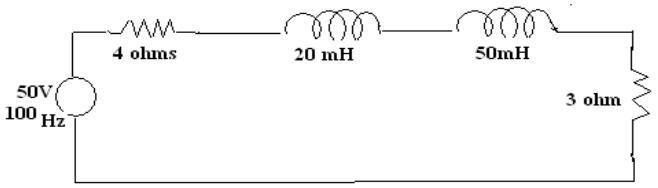
Answer any FIVE questions
All questions carry equal marks

1. a) Define the terms: electric current, potential difference, emf.
b) Derive an expression for star to delta transformation of balanced set of resistances.

2. a) Define node, path, loop and branch in a network.
b) Obtain the currents in all the resistors of the circuit below by loop analysis.



3. a) Define the following
i) Alternating Quantity ii) R.M.S Value
iii) Average Value iv) Form factor
b) Determine the impedance, line current and phase angle for the circuit given below.



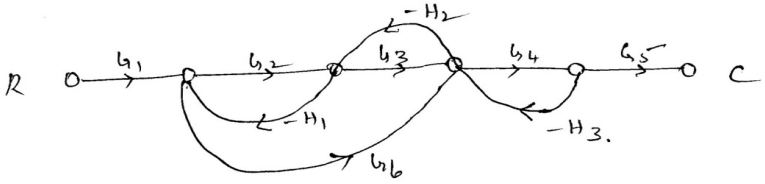
4. a) Derive EMF Equation of DC Generator.
b) A 4-pole wave wound d.c machine armature has 294 conductors.
Find (i) Flux per pole to generate 230V at 1500 r.p.m.
(ii) Electromagnetic torque at this flux when armature current is 120 A.

5. a) Explain the principle of operation of a transformer. What are different applications of transformers?
b) A 6-pole, 50 Hz,3-phase induction motor has a full load slip of 0.04. Compute the frequency of rotor currents.

6. a) How can the range of voltmeter and Ammeter can be extended?
b) Discuss the differences between Moving Coil and Moving Iron Instruments.

7. a) Explain the traffic control system concepts using open loop as well as closed loop system.
b) Why is negative feedback invariably preferred in closed loop systems?

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) Regular/Supplementary Examinations November - 2012

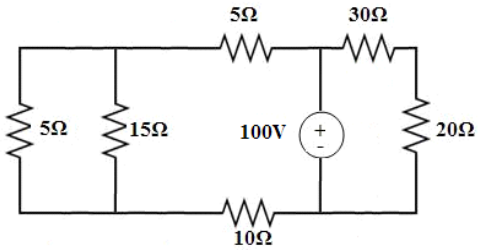
CIRCUIT THEORY

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

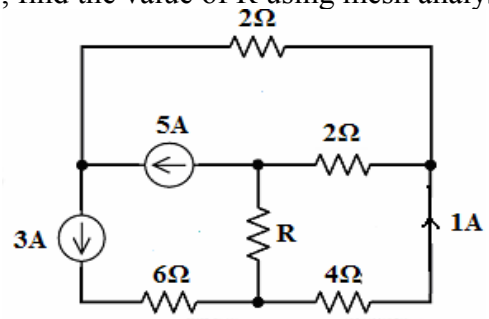
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

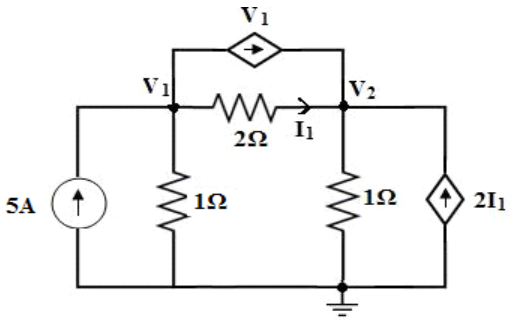
1. a) Explain the terms: Unilateral and bilateral elements.
b) Explain the terms: Active elements and Passive elements.
c) Find the current in each branch of the circuit shown below using current division method.



2. a) 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.

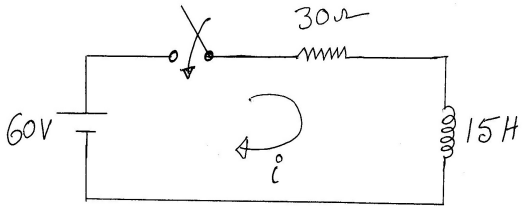


3. a) Define: Time period, frequency, Phase and Phase difference.
b) Obtain average value, RMS value, form factor and peak factor of a half wave rectified sine wave.

4. a) For a circuit, the applied voltage is $v(t)=75 \text{ Sin } (5000t+45^0)$ V and the resultant current is $i(t)=1.5 \text{ Sin } (5000t-15^0)$ A. Calculate the circuit constants.
b) A RLC series circuit of 8Ω resistance should be designed to have a band width of 50Hz. Determine the values of L and C so that the system resonates at 250Hz.

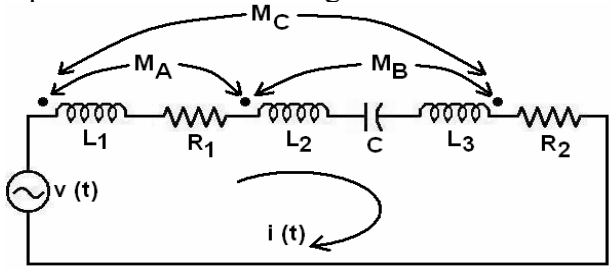
5. a) Show that for a series RLC circuit $f_r = \sqrt{f_1 f_2}$ where f_r resonant frequency and f_1 and f_2 are half power frequencies.

b) A series R-L circuit with R = 30Ω and L=15H has a constant voltage V= 60 v applied at t = 0 as shown below. Determine the current I, Voltage across resistor and inductor.



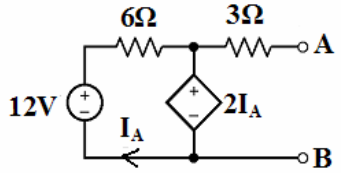
6. a) Obtain the expression for coefficient of coupling.

b) Write the voltage equation for the following circuit shown.



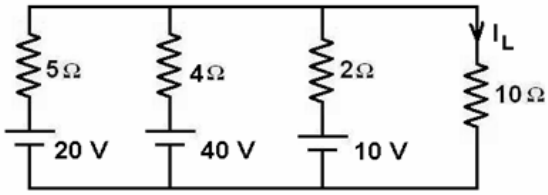
7. a) State and explain the Superposition theorem.

b) For the network shown below, find the Thevenin's voltage, Nortons's current and Thevenin's resistance.



8. a) State and Explain Millman's Theorem.

b) Find the current I_L by using Millman's Theorem.



CODE No.:10BT30224

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular Examinations November - 2012

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) Explain in detail about the classification of elements in electrical circuit.
b) Three series-connected inductor coils have voltages of 20, 30 and 50V appearing across their terminals when the circuit current is changing at a rate of 100A/sec. Determine the equivalent series inductance.

2. a) Derive the torque equation of DC motor.
b) Draw the circuit model of a DC series generator and write the relationships among the current and voltages.

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, 50Hz 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) Explain the principle of operation of alternator.
b) A 12- pole, 3 phase alternator is couple to an engine running at 500 rpm. The generator supplies an induction motor having a full load speed of 1440 rpm. Find the percentage slip and number of poles of this induction motor.

5. a) Explain the principle and operation of full wave rectifier and also give the advantages and disadvantages of full wave rectifier.
b) Draw the V-I characteristics of p-n junction diode.

6. a) Explain in detail about frequency response of CE amplifier.
b) Discuss about SCR characteristics and its applications.

7. a) Explain how dielectric heating is used for different applications?
b) Explain briefly about ultrasonic welding?

8. Derive the expression for electrostatic deflection of CRO?

CODE No.:10BT30301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular Examinations November - 2012

STRENGTH OF MATERIALS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Sketch and explain salient points of the stress-strain curve of mild steel specimen in tensile test.
b) A round copper rod, 560 mm long, has a diameter of 30 mm over a length of 200mm, a diameter of 20 mm over a length of 200 mm and diameter of 10mm over its remaining length. Determine the stress in each section and elongation of the rod when it is subjected to a pull 30kN. Take E=100 kN/mm^2.

2. A beam of length 6 m is simply supported at the ends and carries a uniformly distributed load of 1.5 KN/m throughout it length and three concentrated loads of 1 KN, 2 KN, 3 KN acting at a distance of 1.5 m, 3m, 4.5m respectively from left end. Draw SFD and BMD for the beam and determine the maximum bending moment.

3. a) What are the assumptions made in the theory of simple bending?
b) Derive flexure formula of beams.

4. a) Prove that the maximum shear stress of a solid circular cross section is 1.33 times average shear stress.
b) A timber beam 150 mm wide and 300 mm deep carries a uniformly distributed load of w over the span of 3 m, if the safe stresses are longitudinally 20 N/mm^2, calculate the maximum load that the beam can carry.

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

7. a) Establish a relation for the change in diameter and length of a thin cylindrical shell when subjected to an internal fluid pressure.
b) Calculate the increase in volume of a boiler, 3 m long and 1 m diameter when subjected to an internal pressure of 200 N/cm^2. The wall thickness is such that maximum tensile stress does not exceed 30 MPa. Take E =2 × 10^4 N/mm^2.

8. A compound cylinder is made by shrinking a cylinder of external diameter 300 mm and internal diameter of 250 mm over another cylinder of external diameter 250 mm and internal diameter 200 mm. The radial pressure at the junction after shrinking is 8 N/mm^2. Find the final stresses set up across the section when the compound cylinder is subjected to an internal fluid pressure of 84.5 N/mm^2.

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CODE No.:10BT30302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular Examinations November - 2012

MATERIALS SCIENCE AND METALLURGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

2. a) What is solid solution? Explain their types giving some examples.
b) Explain Hume - Rothary rules that substitution solid solution must satisfied.

3. a) What do you mean by equilibrium diagram? Discuss the experimental method for its construction.
b) Draw a schematic of binary phase diagram of Fe-Fe3C and label their important phases.

4. a) Draw a neat microstructure & give some properties of the following
i) Gray Cast Iron ii) Malleable Cast Iron
b) Give a detail classification of steel. Draw structure & give some properties of Tool and die steel.

5. Explain the following heat treatment process.
i) Annealing ii) Hardening

6. What are bronzes? How are they classified? Give the composition, microstructure, properties and applications of any three of them.

7. How ceramic materials are classified? Discuss each class with their properties and applications.

8. a) Explain the blending methods of producing metal powders.
b) Write the advantages and limitations of powder metallurgy.

CODE No.:10BT30303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular Examinations November - 2012

THERMODYNAMICS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define and explain the following: (i) Reversible Process, (ii) Property of a thermodynamic system, (iii) Intrinsic and extrinsic properties and (iv) Work done.
b) A chilling unit can maintain a room at constant temperature of 5 ^{0}C by removing heat continuously at the rate of 42 MJ/h. Heat leaks into the room from the surrounding atmosphere at a rate of 4 MJ/h. Calculate the time required to cool a food material kept in the room from 45 ^{0}C to 5 ^{0}C. Consider the specific heat of the food material to be 4.2 kJ/kgK.

2. a) Derive the expression for work done by a turbine and work done on a compressor using SFEE.
b) An air compressor takes in air at 100 kPa and 17 ^{0}C, and delivers it at 1 MPa and 600 K to constant pressure cooler, which the air exits at 300 K. Find the specific compressor work and the specific heat transfer in the cooler.

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 ^{0}C out of a tray of 0.25 kg liquid water at 10 ^{0}C. 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) Explain the concept of thermodynamic temperature scale with its application.
b) Derive Clausius Inequality relation.

5. a) Derive Clapeyron equation and state its application.
b) One kg of steam at 18 bar and 280 ^{0} C undergoes a constant pressure process until the quality of becomes 0**.**5 dry. Find the work done, the heat transferred and the change in entropy.

6. a) 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 300K is compressed polytropically until the pressure and temperature become 1500Kpa and 500K respectively. Evaluate the polytropic exponent, the final volume, the work of compression and heat interaction.

7. a) Define the following: (i) Partial pressure, (ii) Mole fraction and (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 ^{0}C, determine the pressure to which the vessel is subjected. If the temperature is raised to 42 ^{0}C, what will then be the pressure in the vessel?

8. a) Write short notes on: (i) Sensible heating (ii) Cooling and dehumidification. Represent the processes on Psychometric chart.
b) An air-water vapour mixture enters a heater-humidifier unit at 6 ^{0}C, 110 kPa, 52 % RH. The flow rate of dry air is 0.12 kg/sec. Liquid water at 12 ^{0}C is sprayed into the mixture at the rate of 0.0018 kg/sec. The mixture leaves the unit at 32 ^{0}C, 100 kPa. Calculate (i) The relative humidity at the outlet, and (ii) the rate of heat transfer to the unit.

CODE No.:10BT30304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular Examinations November - 2012

MACHINE DRAWING

[Mechanical Engineering]

Time: 4 hours **Max Marks: 70**

Answer Parts A, B & C accordingly
Assume suitable data if necessary
All dimensions are in mm

PART-A Answer any TWO questions **[2x4=8]**

1). Sketch the conventional representation of the following:
(i) Lead (ii) Spear Gear
(iii) Cylindrical Compression Spring (iv) Square on Shaft

2). Sketch the following.
(i) Removed Section (ii) Half Section
(iii) Unidirectional Angular dimensioning. (iv) Dimensioning of Counter Sunks

3) Sketch the following related to Geometric Tolerances; as per the Standards:
(i) Circularity Tolerance (ii) Perpendicularity Tolerance
(iii) Cylindrical Tolerance (iv) Radial run-out

4) Sketch the following for a Shaft 50 mm diameter.
(i) Woodruff Key with proportions
(ii) Saddle Keys

PART-B Answer any TWO questions **[2x10=20]**

1) Draw the sectional front view from front and the view from side of a Knuckle Joint, to connect two rods of 50 mm diameter each.

2). Draw the sectional view from front and the view from above of
i) Double Riveted Zig-Zag Lap Joint,
ii) Double Riveted, Double Strap Chain Butt 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 Compression Coupling to connect two shafts, each of diameter 50 mm.

PART-C Answer any ONE question **[1x42=42]**

1. Assemble all the parts of the Screw Jack as shown in figure-1, and draw
   i) Half sectional view from front,
   ii) View from right and
   iii) View from above.
2. Prepare the part drawings of the Single Tool Post as shown in figure-2, indicating dimensions, fits and tolerances if any.

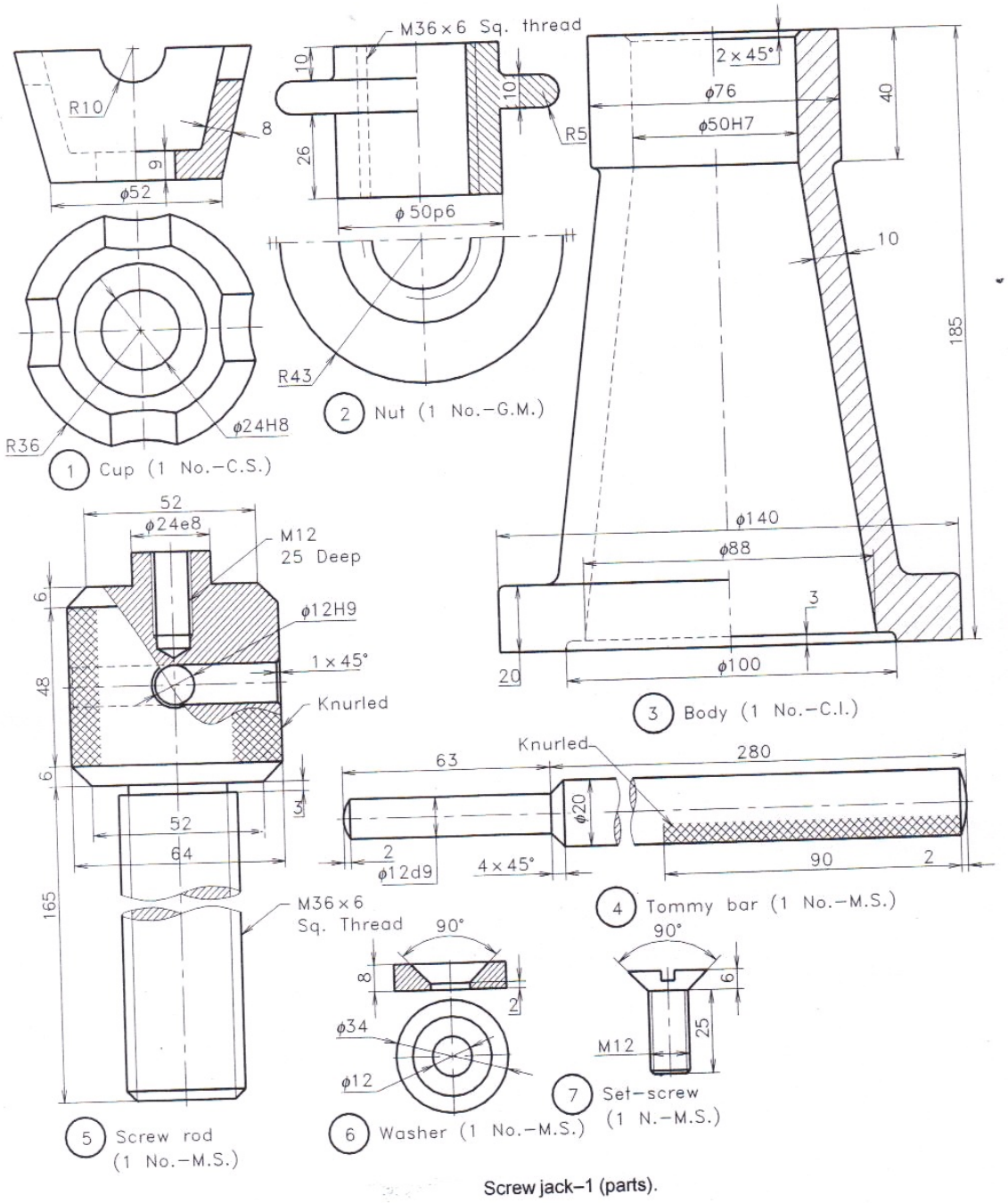
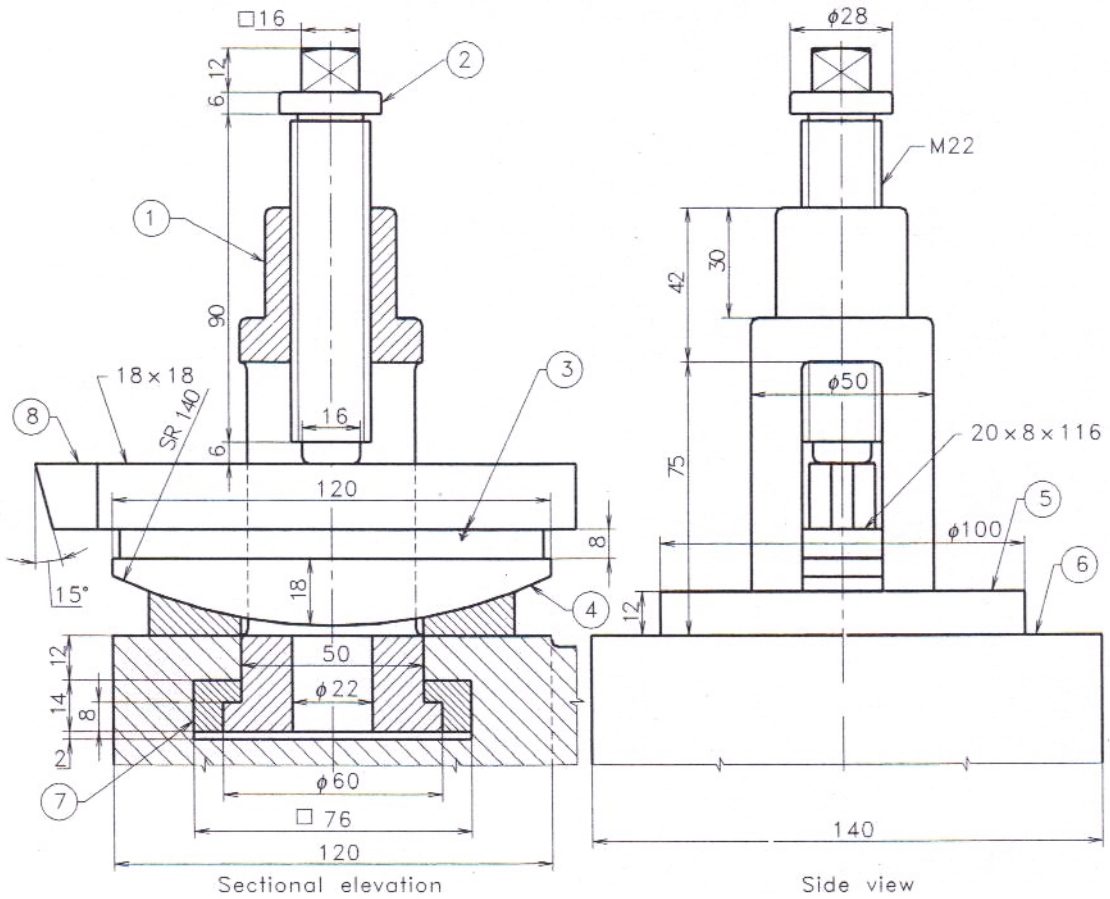


Figure - 1 ; Screw Jack



Item list

Item	Description	Qty.	Material
1	Tool post	1	Steel
2	Clamp screw	1	Steel
3	Distance piece	1	M.S.
4	Wedge	1	Steel
5	Ring	1	Steel
6	Compound rest	1	C.I.
7	Square block	1	M.S.
8	Parting tool	1	H.S.S.

Lathe tool post (single tool) assembly.

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 – 2012

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 temperature dependence of PN diode VI characteristics.
b) Derive an expression transition capacitance of PN diode.

2. a) Draw the circuit diagram of FWR with inductor filter. .
b) A full wave rectified voltage of 18V peak is applied across 500mF filter capacitor. Calculate the ripple and DC voltages if the load makes a current of 100mA.

3. a) Define α and β of a transistor. Derive the relation between them.
b) Describe a set up to obtain the output characteristics of a transistor in CE configuration. Indicate and explain various regions of operation on the characteristics.

4. a) In an NPN transistor if $\beta = 50$ is used in common emitter circuit with $V_{CC} = 10$ Volts and $R_C = 2$ K Ohms. The bias is obtained by connecting 100 K Ohms resistor from collector to base. Find the operating point.
b) How self bias circuit will eliminate drawbacks in fixed bias circuit.

5. a) Draw the circuit for Darlington pair and derive the expressions for Ai, Av, Ri and Ro.
b) Derive Millers theorem and dual of Millers theorem.

6. a) Explain with neat diagram the structure and characteristics of Depletion MOSFET
b) What are the advantages of JFET

7. a) Derive an expression for voltage gain, Input Impedance and output impedance of CD amplifier at low frequencies.
b) Discuss voltage divider biasing of JFET.

8. Explain the principle of operation and characteristics of Tunnel diode with the help of energy band diagrams.

CODE No.:10BT30402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

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) State and prove Baye's theorem of probability.
b) When are two events said to be mutually exclusive. Explain with an example.
c) When two dice are thrown, find the probability of getting the sums of 10 or 11.

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

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

Show, by a sketch, the value x into which the values of i are mapped by x. What type of random variable is X?
b) Explain Gaussian random variable with neat sketches.

3. Define the following:
(a) Expected value of a function of a random variable.
(b) Moments about the origin
(c) Central moments.
(d) Explain the importance of Skew ness.

4. a) Random variables X and Y are joint Gaussian and normalized if

$$f_{X,Y}(x,y) = \frac{1}{2\pi\sqrt{1-\rho^2}} \exp\left[-\frac{x^2 - 2\rho xy + y^2}{2(1-\rho^2)}\right]$$

where $-1 \le p \le 1$. Show that the marginal density functions

are $f_X(x) = \frac{1}{\sqrt{2\pi}} \exp(-x^2/2)$ and $f_Y(y) = \frac{1}{\sqrt{2\pi}} \exp(-y^2/2)$

b) Find the density function of W=X+Y, where the densities of X and Y are assumed to be: $f_x(x)=0.5[u(x)-u(x-2)]$; $f_y(y)=0.5[u(y)-u(y-2)]$.

5. a) Define random variables V and W by

V=X+aY
W=X-aY

Where a is real number and X and Y random variables, Determine a in terms of X and Y such that V and W are orthogonal.
b) Gaussian random variables X and Y have first and second order moments $m_{10} = -1.1$, $m_{20} = 1.16$, $m_{01} = 1.5$, $m_{02} = 2.89$, $R_{XY} = -1.724$ find C_{XY}, ρ.

6. a) Define a K^{th} -order stationary random process. When it will become a SSS Process.

b) A random process is defined by $Y(t)= X(t) \cos(\omega_o t+\theta)$ where X(t) is WSS random process that amplitude modulates a carrier of constant angular frequency ω_o with a random phase θ independent of X(t) and uniformly distributed on$(-\pi, \pi)$. Is Y(t) a WSS random process.

7. a) The autocorrelation function of a random process X(t) is $R_{XX}(\tau) = 3 + 2\, e^{-4\tau^2}$

(i) Find the average power in X(t)

(ii) Find the power spectrum of X(t).

b) Write on random signal response of linear system.

8. a) A random process has the power density spectrum as $Y_{XX}(w) = \dfrac{6\,w^2}{1+\,w^4}$. 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) Regular/Supplementary Examinations November - 2012

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

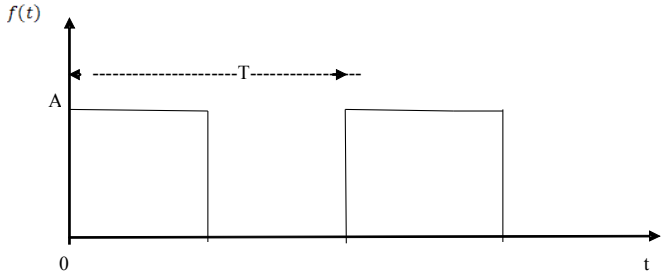
1. a) Which of the following signals or functions are periodic and if what is its fundamental period?

i) $g(t) = e^{j60\,ft}$ i

ii) *g(t) = 10 Sin (12ft) + 4 Cos (18ft)*

b) Derive the condition of orthogonality between two signals $f_1(t)$ & $f_2(t)$.

2. Obtain the exponential Fourier series of the wave form shown below



3. State and prove the

(i)Modulation theorem of Fourier transform. (ii) Duality property of Fourier transform.

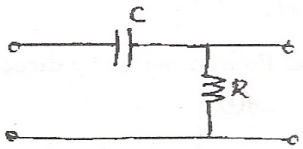
4. a) What is Poly-Wiener criteria and what you do for distortion less transmission?

b) Show that relation between bandwidth and rise time for High Pass Filter.

5. a) Define LTI system. Determine whether the following system is LTI system or not

$$y(t) = 2x(t - 1)$$

b) Determine the step response of the following electrical system.



6. a) Given a signal $x(t) = 3\cos(50\pi t) + 10\sin(300\pi t) - \cos(100\pi t)$. Find the Nyquist rate for this signal.

b) Explain the following sampling techniques (i) Natural sampling (ii) Flat top sampling.

7. a) Explain why over sampling is restored to in certain applications. How does it help?

b) What is aliasing and anti aliasing? What are the causes to it and how it can be eliminated?

8. a) Bring out the differences between Fourier, Laplace and Z-transform.

b) Derive the Convolution theorem and scaling property of Z-transform.

CODE No.:10BT30421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November – 2012

ELECTRONIC DEVICES AND CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about PN junction diode with neat diagrams and VI characteristics of PN junction diode.
b) Derive current components of diode.

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) Discuss the different current components in a transistor and define large signal current gain and small signal current gain.
b) In a NPN transistor $\alpha = 0.98$, $I_{CO} = 20\ \mu A$, $I_B = 100\ \mu A$, determine I_C current. If $\alpha = 0.9$ transistor is used and all others remain same what is I_C current.

4. a) Draw the circuit diagram of fixed bias circuit in CE configuration and obtain the expression for I_B. Why the circuit is not suitable if the β of the transistor is changed?
b) A Ge transistor having $\beta=100$ and $V_{BE}=0.2V$ is used in a fixed bias amplifier circuit where $Vcc=16V$, $Rc=5K\Omega$ and $R_B=790K\Omega$. Determine the operating point.

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) With neat structure explain the principle of operation of JFET.
b) Explain how FET acts as VVR.

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

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

CODE No.:10BT30422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

DIGITAL LOGIC DESIGN

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) How do you represent a number in Binary number? What are the advantages of Octal and Hexadecimal number systems?
b) What do you mean by a self complementing code? Write two self complementing codes.

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

3. a) Minimize the following expressions using K-map and realize using NAND Gates.
$f = \sum m(0,1,4,5,6,7,9,11,15) + d(10,14)$
b) Minimize the following expression using K-map and realize using NOR Gates.
$f = \prod M(1,4,5,11,12,14) \cdot d(6,7,15)$

4. a) With the help of a circuit diagram, explain the operation of series Full adder and compare its performance with parallel adder.
b) Explain the function of an Encoder and list its applications.

5. a) Discuss the disadvantages of level triggering. Explain the effects of level triggering in a JK flip flop.
b) Explain the differences between asynchronous and synchronous sequential circuits.

6. a) Explain the operation of a 4 bit shift register.
b) Explain the operation of a Johnson counter.

7. a) Explain the method of Error detection and correction.
b) Explain the features of PAL.

8. a) Explain the problems in asynchronous circuits.
b) Explain the methods to eliminate static hazards in asynchronous circuits.

CODE No.:10BT30501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

DISCRETE MATHEMATICAL STRUCTURES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is a universally valid formula? Show that the proposition ($P \wedge (Q \rightarrow P)) \rightarrow Q$ is universally valid formula.
b) Obtain the principal corrective normal form of $(\neg P \vee \neg Q) \rightarrow (P \Leftrightarrow \neg Q)$.

2. a) Show that $(\exists x)M(x)$ follows logically from the [premises $(x)(H(x) \rightarrow M(x)$ and $(\exists x)H(x)$.
b) If the universe of discourse is the set {a,b,c} eliminate the quantities in the formula: $(x)R(x) \wedge (x)S(x)$

3. a) Give an example of a relation which is irreflexive, antisymmetric and transitive and justify.
b) Write down the power set of A, when A={a, b, c, d}. Also draw Hasse diagram of $(P(A), \subseteq)$.

4. a) Let '0' is an operation on Z defined by xoy=x + y +1. Verify that (Z, 0) is an abelian group.
b) For a group G, Prove that the function $f : G \rightarrow G$ defined by $f(a) = a^{-1}$ is an Isomorphism iff G is abelian.

5. a) Write down any three methods of proving theorems with suitable example.
b) How many integers between 1 and 300 (inclusive) are divisible by at least one of 5, 6 and 8?

6. a) Solve the recurrence relation by substitution $a_n = a_{n-1} + 3^n$ Whenever $a_0 = 1$.
b) Solve the recurrence relation using generating function $a_n - 9a_{n-1} + 20a_{n-2} = 0$ for $n \geq 2$ and $a_0 = -3, a_1 = -20$.

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) Define the following :
(i) Minimal Spanning Tree (ii) Chromatic number of a complete graph K
b) Use Kruskal's algorithm to find a minimum spanning tree for an example of the weighted graph.

CODE No.:10BT30502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

DATA STRUCTURES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is an ADT? Give an ADT for Graph.
b) Apply merge sort technique to sort the elements
10, 5, 15, 16, 6, 1, 8, 4, 7, 2, 12, 3, 9, 11, 13, 14.

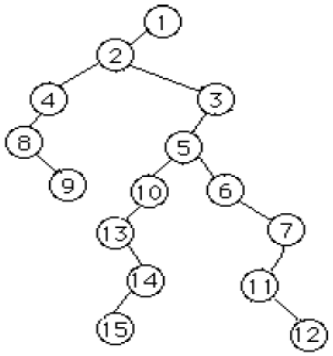
2. What is a circularly linked list? Give an algorithm to (i) insert an element and (ii) delete an element from a circularly linked list.

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

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

5. Describe about various cases that arise while inserting a new node in to an AVL tree with illustrations.

6. Following is the binary tree representation of a tree.



a) Given the following implementation of preorder traversal, list the nodes of the above tree in preorder.

```
void preorder(link n)
{
 link c;
 printf("%d\n", n->key);
 c = n->leftmostChild;
 while (c != NULL)
 {
   preorder(c);
   c = c->rightSibling;
 }
}
```

b) How could you change the above function to print the nodes in postorder? List the nodes of the tree above in postorder.

7. Give algorithms to do BFS and DFS of a graph. With an example describe how these algorithms work.

8. Discuss about merits and demerits of various file organization techniques. Use appropriate examples and diagrams in your explanation.

CODE No.:10BT31001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

THERMODYNAMICS AND FLUID MECHANICS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the concept of temperature scales.
b) Explain the second law of thermodynamics mentioning its applications.

2. a) Derive an expression for minimum work in terms of initial and final pressures and volumes of air drawn in per stroke, when compression is adiabatic. State the assumptions made.
b) Describe with a neat sketch the working of a centrifugal compressor. How pressure changes take place in impeller and diffuser?

3. a) With a neat sketch explain how dryness fraction is measured using a throttling calorimeter.
b) With a neat sketch explain the working principle of Cochran boiler.

4. a) What are the different modes of heat transfer? Explain with examples.
b) Explain adiabatic heating and sensible heating using psychometric chart.

5. a) Explain the working of a piezometer mentioning its applications.
b) Differentiate between U-tube and inverted U-tube manometer.

6. a) Water flows upwards in a vertical pipe line of gradually varying section from point 1 to point 2, which is 1.5m about point 1, at the rate of $0.9m^3/s$. At section 1 the pipe dia is 0.5m and pressure is 800kPa. If pressure at section 2 is 600kPa, determine the pipe diameter at that location. Neglect losses.
b) A liquid with specific gravity 0.8 flows at the rate of 3liters/s through a venturimeter of diameters 6cm and 4 cm. If the manometer fluid is mercury (Sp. Gravity = 13.6) determine the value of manometer reading h.

7. a) Describe about dimensional homogeneity.
b) What is meant by similitude? Explain in detail.

8. a) Derive an equation of continuity for one dimensional flow.
b) Differentiate between Orifice meter and Venturi meter.

CODE No.:10BT32301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

BIO CHEMISTRY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Define structure and properties of different types of carbohydrates?

2. Write short note on the following :
   a) Mechanism of enzyme action?
   b) What are allosteric enzyme and give examples?
   c) Michaelis-Menten equation and its significance?

3. a) The conversion of A to E is coupled by the two reactions below.
   $A + B \rightarrow C \quad \Delta Go'1 = + 15$ kJ/mol
   $C + D \rightarrow E \quad \Delta Go'2 = - 35$ kJ/mol
   Calculate the total $\Delta Go'$ for the coupled reactions?
   b) How many ATP's produced in Aerobic, Anaerobic respiration and describe their reactions?

4. Give a brief note about Glycolysis with structure and its regulation?

5. Write notes on
   a) Hierarchy of Proteins structure
   b) Amination and transamination reactions

6. Explain Shikimate path way with structures?

7. Briefly describe the fatty acid oxidation?

8. Explain biosynthesis and degradation of nucleic acids.

CODE No.:10BT32302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November – 2012

CELL BIOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Give an account on cell complexity basing on cell sizes and shapes with neat labeled diagrams.

2. Describe the components of cytoplasmic matrix and functions of each.

3. Give the topography of ribosomes and describe the ribosomal proteins associated with them.

4. Explain the process of protein glycosylation occurring in the endoplasmic reticulum and Golgi complex.

5. Describe the important features of active transport. What is the source of energy that drives the active transport?

6. Define cell cycle. What are the molecules that control cell cycle?

7. Discuss in detail on G-Protein coupled receptors role in cell signalling.

8. What are the general characters of cell differentiation? Explain differentiation in multicellular organisms.

CODE No.:10BT32303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

MICRO BIOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Describe the Contributions of the following people in the development of microbiology:
   a) Edward Jenner
   b) Robert Koch
   c) Louis Pasteur
   d) Joseph Lister.

2. Discuss on classification and nomenclature of prokaryotes with special reference to Bergey's manual.

3. Classify the various types of bacterial media and write note on laboratory culture of bacteria.

4. Write short notes on :
   (a) Differential staining.
   (b) IMVIC Tests.
   (c) Pure culture methods.
   (d) Fungal staining.

5. Explain the techniques employed for the preservation microorganisms.

6. Write short notes on:
   (a) Tuberculosis.
   (b) Bacterial leaf blight of Rice.
   (c) Mode of Infection.
   (d) Pathogens.

7. Describe the various methods of replication of viruse.

8. Describe the techniques employed for the assay of plant, animal and prokaryotic viruses.

CODE No.:10BT32304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

FLUID FLOW IN BIOPROCESSES

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the three transport processes and write the governing equations in each process?
b) Explain in detail about the applications of transport processes in biotechnological industries.

2. a) What is equation of state and write any famous equation of state?
b) The pressure in the vapor space of the last effect in a multiple effect evaporation unit corresponds to 350 mmHg. What is the abs. pressure in N/m^2 if $g = 9.81\ m/s^2$ and the density of mercury is $13.6\ g/cm^3$?

3. a) Define boundary layer and explain the formation of boundary layer over a flat plate.
b) Discuss about laminar and turbulent flow in boundary layers.

4. Write about rheological behavior of Newtonian and non-Newtonian fluids. Give examples for each.

5. a) An oil of viscosity 0.1 Ns/m2 and relative density 0.9 is flowing through a circular pipe of diameter 50 mm and of length 250m. 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) Variable area conduit b) shock waves
c) critical pressure ratio d) Stagnation temperature

7. a) Derive an expression for minimum fluidization. Also give its physical significance.
b) Explain continuous fluidization and give its applications.

8. a) Explain briefly construction of stuffing boxes and how these are different from mechanical seals?
b) A heavy oil at 20^oC having a density of $900\ kg/m^3$ and a viscosity of 6 cP is flowing in 4-in 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 $0.93x10^5$ 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) Regular/Supplementary Examinations November - 2012

SWITCHING THEORY & LOGIC DESIGN

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What do you mean by self complementary code? Give examples.
b) Express decimal number 8620 in i) BCD ii) Excess-3 iii) 2421 code.
c) Show that the dual of EX-OR gate is equal to its complement.
d) Explain about error detecting and correcting codes.

2. a) Obtain the Dual of the following Boolean expressions
i) A'B'C+ABC'+A'B'C'D
ii) AB+ABC'
b) For the given Boolean function F=x y' z + x' y' z +w' x y + w x' y + w x y
i) Simplify the function to minimal literals using Boolean algebra.
ii) Draw the logic diagram
c) Simplify the function to minimal literals using Boolean algebra.
F=(BC'+ A'D)(AB'+CD')

3. a) Simplify the Boolean function using the tabulation method.
F (A, B, C, D) = ∑m (0, 1, 2, 8, 10, 11, 14, 15)
b) Simplify the Boolean function using K-map F(W,X,Y,Z) = π(1,2,4,5,7,8,10,11,13,14)

4. a) Draw the truth tables of half subtractor and full subtractor. Implement these using only NAND gates.
b) Design a combinational circuit that accepts a 3 bit number and generates an output binary number equal to the square of the input number.

5. a) Implement the following three Boolean functions with a PLA:
$F_1(A,B,C)=\sum(0,1,2,4)$;
$F_2(A,B,C)=\sum(0,5,6,7)$;
$F_3=\sum(0,3,5,7)$
b) Explain about programmable array logic (PAL).

6. a) What is race-around problem in JK Flip-flop? Explain how it is eliminated in Master slave JK Flip –Flop.
b) Design Mod-10 Counter using T Flip-Flops.

7. a) Design an overlapping sequence detector for detecting the sequence of 110110.
b) Explain the capabilities and limitations of finite state machines.

8. a) Draw and explain the ASM chart for designing a binary multiplier.
b) Explain the procedure of state minimization using merger graph and merger table.

CODE No.:10BT41001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2012

ELECTRICAL & ELECTRONIC MEASUREMENTS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is the difference between 3½ digit and 4 digit display meters?
b) Explain the principle of operation of a dual slope integrating type DVM with the help of block diagram.

2. a) Describe the series-type ohmmeter, Explain how it is designed. And Derive the equations.
b) Describe construction and working of shunt- type ohmmeter. Derive the design equations. Discuss the Advantages and Disadvantages of the shunt-type ohmmeter.

3. a) Explain the construction and working principle of an electrodynamometer type wattmeter
b) Explain how the following adjustments are made in a single-phase induction type energy meter
i) lag adjustment ii) creeping iii) friction compensation adjustment .

4. a) Explain how Schering Bridge is used to measure capacitance.
b) Explain the principle of operation of Wheatstone bridge for resistance measurement.

5. a) With neat diagram draw and explain the principle of operation of ramp type DVM.
b) Discuss the important difference between FET input voltmeter and true RMS volt-meter.

6. a) Write short notes on :
i) Wave meters
ii) Wave Analyzers
b) Describe the working principle of output power meter with suitable diagram.

7. a) Explain the function of the following controls
i) Z modulation ii) Astigmatism iii) Delayed sweep iv) ALT I CHOP mode 6.
b) How does the digital storage oscilloscope differ from the conventional storage oscilloscope using a storage cathode ray tube?

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 June - 2013

PROBABILITY AND STATISTICS

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

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

Answer any FIVE questions
All questions carry equal marks

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

2. a) Find the probability that at most 5 defective components will be found in a lot of 200. Experience shows that 2% of such components are defective. Also find the probability of more than five defective components.
b) The marks obtained in statistics in a certain examination found to be normally distributed. If 15% of the students ≥ 60 marks, 40% < 30 marks, find the mean and standard deviation of marks.

3. a) Estimate(predict) the blood pressure(B.P) of a women of age 45 years from the following data which shows the ages X and systolic B.P Y of 12 women. Also whether the two variables ages X and B.P Y correlated?

Age(X)	56	42	72	36	63	47	55	49	38	42	68	60
B.P (Y)	147	125	160	118	149	128	150	145	115	140	152	155

b) The two regression lines are having their means & standard deviations 31.6, 38 and 3.72, 6.31 and $\rho = -0.36$. Find the two regression lines.

4. a) Distinguish between sample and population. What is a sampling distribution? What is Standard Error?
b) Write about i) critical region ii) level of significance iii) power of a test and iv) degrees of freedom.

5. a) Basing on a sample of 100 tyres, the averge life of a tyre was found to be 21,431 miles with a standard deviation of 1295 miles. Test the null hypothesis that $\boldsymbol{\mu} = 22000$ miles against the alternative $\boldsymbol{\mu} < 22000$ miles ($Z = -1.645$ at 0.05 level).
b) From the following data on the performance of two operators, test whether the means differ significantly from each by taking $\boldsymbol{\alpha} = 0.05$.
Operator-A: n = 100, mean = 210, sd = 11
Operator-B: n = 150, mean = 220, sd = 11.

6. a) A test of the breaking strengths of 6 ropes manufactured by a company showed a mean breaking strength of 7750 lb and a strength deviation of 145 lb, whereas the manufacturer claimed a mean breaking strength of 8000 lb. Can we support the manufacturer's claim at a level of significance of 0.01?
b) In experiments on pea breeding, the following frequencies of seeds were obtained:

Round and yellow	Wrinkled and yellow	Round and green	Wrinkled and green	Total
315	101	108	32	556

Theory predicts that the frequencies should be in proportions 9:3:3:1. Examine the correspondence between theory and experiment. Use a 0.01 level of significance.

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

8. a) Derive the average number of customers in the Queue. In (M/M/1): (∞/FCFS) model.

b) The mean rate of arrival of planes at an airport during the peak period is 20 hours. The number of arrivals in any hour follows a Poisson distribution. When there is congestion the planes are forced to fly over the field in the stack awaiting the landing of other planes that arrived earlier. 60 planes per hour can land in good weather and 30 planes per hour can land in bad weather.

i) How many planes would be flying over the field in the stack on an average in good weather and in bad weather?

ii) How long a plane would be in the stack in the process of landing in good and bad weather?

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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) Discuss interrelationships of biosphere with atmosphere.
b) Explain the contributions of Anna Hazare to his village environment.

2. a) What are the direct and indirect values of forest resources?
b) Explain hydrological cycle in an ecosystem.

3. a) Explain the meaning of 10% rule in ecosystem's energy flow.
b) Explain ecologically why herbivores are preferred to carnivores for meat growing.

4. a) Define biodiversity and write an essay on value of biodiversity.
b) Write in detail about endemic, endangered and extinct species.

5. a) Discuss causes, consequences and control measures of nuclear pollution.
b) Explain how Tsunami disaster is managed.

6. a) Discuss various problems in enforcing environment protection acts.
b) Discuss in detail the story of ozone layer destruction.

7. a) Explain the causes, effects and remedies of cancer.
b) Write a detailed note on important international protocols and conventions on environment.

8. a) Prepare a field report of the on site of a water ecosystem.
b) Describe the objectives of a field visit.

CODE No.:10BT3BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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 $(x^2 - y^2 - z^2)p + 2xyq = 2xz$.

b) Solve the heat equation $\frac{\partial u}{\partial t} = \frac{\partial^2 u}{\partial x^2}$, with boundary conditions $u(0,t) = u(1,t) = 0; 0 < x < 1, t > 0$.

2. .a) Define Beta and Gamma functions. Also prove that $\beta\left(m, \frac{1}{2}\right) = 2^{2m-1}\beta(m,m)$.

b) Prove that $\frac{d}{dx}\left\{J_n^2(x)\right\} = \frac{x}{2n}\left\{J_{n-1}^2(x) - J_{n+1}^2(x)\right\}$.

3. a) If $\cosh(u + iv) = x + iy$. Prove that $\frac{x^2}{\cosh^2 u} + \frac{y^2}{\sinh^2 u} = 1$ and $\frac{x^2}{\cosh^2 v} - \frac{y^2}{\sinh^2 v} = 1$.

b) Determine the analytic function $f(z) = u + iv$ if $u - v = \frac{\cos x + \sin x - e^{-y}}{2(\cos x - \cosh y)}$ and $f\left(\frac{\pi}{2}\right) = 0$.

4. a) Evaluate $\int_C (z^2 + 3z + 2)dz$, where C is the arc of the cycloid $x = a(\theta + \sin\theta)$, $y = a(1 - \cos\theta)$, between the points (0,0) and *(πa, 2a)*.

b) Evaluate $\oint_C \frac{z^3 - 2z + 1}{(z - i)^2} dz$, where $C: |z| = 2$.

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 $\oint_C \frac{1}{(z^2 + 3z + 2)} dz$ where C: $|z| = 3$ by using Residue theorem.

b) Show that $\int_0^\infty \frac{\sin mx}{x} dx = \frac{\pi}{2}$, (m > 0) using contour integration.

7. a) State and Prove Rouche's theorem.
b) A Bilinear transformation preserves cross ratio of four points.

8. a) Find the image of an infinite strip R: $\frac{1}{4} < y < \frac{1}{2}$ of z plane under the mapping $w = \frac{1}{z}$ in w plane.
b) Discuss the transformation about $w = z^2$

CODE No.:10BT3BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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 inverse of the matrix by using elementary operations $\begin{bmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$.

b) Solve the following equations by Gauss elimination method:
$2x + y + z = 10$; $3x + 2y + 3Z = 18$; $x + 46 + 9z = 16$

2.

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

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

3. a) Find a real root of the equation $x^3 - 2x - 5 = 0$ by Newton Raphson method.

b) Fit a parabola $Y = a + bx + cx^2$ to the following data:

x:	1	2	3	4	5	6	7	8	9
y:	2	6	7	8	10	11	11	10	9

4. a) Construct the Newton's forward interpolation polynomial for the following data

x	0	1	2	3	4
f(x)	1	5	11	19	29

hence evaluate f(5).

b) The following table gives the viscosity of a lubricant as a function of temperature

Temperature ^{0}C	100	120	150	170
Viscosity	10.2	7.9	5.1	4.4

Find the viscosity of the lubricant at a temperature 130^{o}C.

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

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

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

6.

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

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

7. a) Form the partial differential equation by eliminating the arbitrary function from $z = x f_1(x+t) + f_2(x+t)$

b) If a string of length *l* is initially at rest in equilibrium position and each of its points is given by the velocity $\left(\frac{\partial y}{\partial t}\right)_{t=0} = u_0 \sin\left(\frac{\pi x}{l}\right), 0 < x < l$

Determine the displacement y(x ,t).

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

b) Obtain a half-range cosine series for *f(x)* is given by $f(x) = \begin{cases} kx, & 0 \le x \le \frac{L}{2}, \\ k(L-x), & \frac{L}{2} \le x \le L. \end{cases}$

Deduce that $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \ldots = \frac{\pi^2}{8}$.

CODE No.:10BT30101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

MECHANICS OF SOLIDS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) A Flat bar of aluminum alloy 25mm wide and 5mm thick is placed between two steel bars each 25mm wide and 10mm thick to form a composite bar of size 25mm X 25mm.The three bars are fastened together at a temperature of 15^{o}C. Find the stress in each bar when the temperature of the whole assembly is raised to 55^{o}C. Take $\alpha_{al}=20 \times 10^{-6}/^{0}$C and $\alpha_{s}=12 \times 10^{-6}/^{0}$C

b) Determine the strain energy stored in 2.0m long prismatic member of cross sectional area 1200mm^2 subjected to load of 20N, applied (i) gradually (ii) suddenly and (iii) falling vertically from a height of 0.2m. Take E=200GPa.

2. a) Derive relationship between Load, SF and BM.

b) A ladder of length 3m rests against a smooth vertical wall and rough horizontal floor, making an angle of 30^{0} with the vertical. A man of weight 500N stands on the ladder at its middle. Sketch SFD, BMD and axial Force Diagram of the ladder.

3. a) Determine the maximum stress induced in a wire of 8mm diameter when it is wound around a drum of diameter 1000mm. Take E_w=100GPa.

b) Determine the breadth and depth of a most efficient rectangular section that can be obtained from a wooden log of 100mm diameter.

4. A square column of size 600 mm X 600 mm is subjected to a compressive load of 2500 kN at an eccentricity of 150 mm and 200 mm with respect to the centroidal axes. Determine the stresses at the corners of the column.

5. a) Derive Torsion Formula.

b) A Circular Solid Shaft is 1.25m long, 100mm in diameter and is subjected to a Torque of 400 N-m at free end. Determine the maximum shear Stress developed in the shaft. If the shaft is replaced by a hollow shaft of same weight with diameter ratio 0.5, determine the change in the maximum stress.

6. An open coiled steel helical spring has 10 coils of 75 mm mean diameter and the diameter of the wire is 12 mm. The angle of the helix is 22^{0}. Determine the load that would cause a deflection of 25 mm in the spring and the corresponding bending and shear stresses developed in the spring wire.

7. A thin steel cylindrical shell of thickness 12 mm, 1.25 m diameter and 3.5 m long is carrying a fluid at a pressure of 2.2 N/mm^2. Find the change in diameter, length and volume of the cylinder.

8. a) Derive Lame's equations for the analysis of thick cylinders.

b) A thick cylinder having internal radius 150mm and external radius 400mm is subjected to an internal pressure of 5MPa. Sketch the variation of radial stress and hoop stress across the thickness of the cylinder.

CODE No.:10BT30102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

BUILDING MATERIALS AND CONCRETE TECHNOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the qualities of a good brick.
b) Explain the properties of building stones.

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

3. a) Describe the field tests for cement.
b) What are the advantages and disadvantages of natural seasoning of timber?

4. a) What are the operations involved in the mechanical treatment of steel?
b) Discuss the various aluminium alloys.

5. a) Write short notes on proportioning of concrete and water cement ratio.
b) Write short notes on quality of mixing of water.

6. a) Describe the procedure for determination of flexural strength of concrete.
b) What is the necessity of non-destructive testing of concrete? Explain the Pulse velocity method.

7. a) Explain, what are the factors which control the performance of High-performance concrete.
b) Explain, what are the factors that affect the shrinkage and creep of concrete.

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

CODE No.:10BT30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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) Derive the emf equation of DC generator.
b) A 30 kW, 250V DC shunt generator has armature and field resistances of 0.05Ω and 90Ω respectively. Determine the total armature power developed when working (i) As a generator delivering 30kW output and (ii) As a motor taking 30kW input.

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 and (iii) magnetizing current.

4. a) What is synchronous speed? Establish the relation among frequency, speed and number of poles
b) A 1000kVA, 3300 V, 50Hz, 3-phase star connected alternator has 0.2Ω resistance when measured between any two stator terminals. Effective resistance is 1.5 times the dc resistance. Synchronous reactance pre phase is 4Ω. Calculate the full load regulation of the alternator at i) 0.8 lagging and ii) 0.8 leading power factor.

PART - B

5. a) Describe the working of Submerged Arc Welding its suitability.
b) Compare brazing, soldering and gas welding.

6. a) With neat sketches, explain the working principle of 4 stroke spark ignition engine.
b) What are the different kinds of fuels used in IC engines.

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

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

CODE No.:10BT30104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

SURVEYING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write detailed notes on reciprocal ranging.
b) A steel tape is 20 m long standardized at 55^0 F with a pull of 10 kg was used for measuring a base line. Find the correction per tape length, if the temperature at the time of measurement was 80^0 F and the pull exerted was 16 kg. Weight of 1 cubic cm of steel = 7.86 g, weight of tape = 0.8 kg and E = 2.109 x 10^6 kg/cm^2. Coefficient of expansion of tape = 6.2 x 10^{-6} per 1^0 F.

2. a) Explain the following terms
(i) True meridian (ii) Magnetic meridian
(iii) Dip of a magnetic needle (iv) Magnetic declination
b) State Lehmann's rules in plane table surveying. Explain how they are used in solving three point problem by trail and error method.

3. a) Write the characteristics of contours.
b) An observer standing on the deck of a ship just sees a light-house. The top of the light-house is 42 m above the sea level and the height of the observer's eye is 6 m above the sea level. Find the distance of the observer from the light-house.

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 following
(i) Index bar (ii) Retrograde vernier (iii) Transiting of theodolite
(iv) Levelling head of a theodolite
b) A closed traverse ABCDEA was run in the counter clockwise direction, and the following data were obtained.

Line	Length (m)	Included angle
AB	186	Angle A = 118^0 20′
BC	164	Angle B = 82^0 10′
CD	303	Angle C = 137^0 00′
DE	162	Angle D = 73^0 44′
EA	240	Angle E = 128^0 36′

The bearing of AB was 24^0 30′. Determine the closing error, adjust it, and give the corrected consecutive coordinates.

6. a) Explain the principle of stadia method of tachometric surveying.
b) A tachometer was set up at a station A and the readings on a vertically held staff at B were 2.255, 2.605 and 2.955 m, the line of sight being at an inclination of + 8^0 24′. Another observation on the vertically held staff at B.M. gave the readings 1.640, 1.920 and 2.200 m, the inclination of the line of sight being + 1^0 6′. Calculate the horizontal distance between A and B, and the elevation of B if the R.L. of B.M. is 418.685 m. The constants of the instrument were 100 and 0.3.

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

8. a) Describe the various parts of a total station instrument with a neat sketch.
b) What is GPS? How is it useful in field survey?

CODE No.:10BT30105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

FLUID MECHANICS-I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is the difference between cohesion and adhesion?
b) State and explain Newton's law of viscosity.
c) Determine the viscosity of a liquid having kinematic viscosity 6 stokes and specific gravity 2.0.

2. a) Show that the centre of pressure of any lamina immersed under liquid is always below its centroid.
b) Determine the total pressure and centre of pressure on an isosceles triangular plate of base 4m and altitude 4m when it is immersed vertically in an oil of specific gravity 0.9. The base of the plate coincides with the free oil surface.

3. a) Explain Lagrangian and Eulerian methods of describing fluid motion. Of these two methods, which one is widely used ? Why?
b) An airplane is observed to travel due north at a speed of 240 kmph in a 80 kmph wind from north-west. What is the apparent wind velocity observed by the pilot? What is the apparent wind direction?

4. a) State law of conservation of mass and derive corresponding mathematical expression for a two dimensional steady incompressible flow in Cartesian coordinates.
b) A 300 mm diameter pipe carries water under a head of 20 m with a velocity of 3.5 m/s. If the axis of the pipe turns through 45^0, find the magnitude and direction of resultant force at the bend.

5. A straight pipe 30 cm diameter, 6 km long is laid between two reservoirs of surface elevation 170 m and 120 m. To increase the capacity of the line a 20 cm diameter pipeline, 3 km long is laid from the original line's mid point to the lower reservoir. What percentage increase in flow rate is gained by installing the new line? Take f = 0.02 for all pipes.

6. a) Water from a tank having a surface area of $10m^2$ flows over a 90 notch. It is found that the time taken to lower the level from 8cm to 7cm above the bottom of the notch is 43.5 seconds. Determine the coefficient C_d assuming that it remains constant during his period.
b) A Venturimeter is to fitted in a horizontal pipe of 0.15m diameter to measure a flow of water which may be anything up to $240m^3$/hour. The pressure head at the inlet for this flow is 18m above atmospheric and the pressure head at the throat must not be lower than 7m below atmospheric. Between the inlet and the throat there is an estimated frictional loss of 10% of the difference in pressure head between these points. Calculate the minimum allowable diameter for the throat.

7. a) Explain Reynolds Experiment. Define and explain the significance of Reynolds number.
b) For the laminar flow through a circular pipe , prove that
i. the shear stress distribution across the section of the pipe is linear and
ii. the velocity variation is parabolic.

8. a) The resisting force F of a plane during flight can be considered as dependent upon the length of aircraft l, velocity V, air viscosity μ, air density ρ and bulk modulus of air K. Express the functional relationship between these variables using dimensional analysis. Give the physical meaning of dimensionless groups.
b) It is proposed to model a submarine moving at 10 m/s by taking a 10:1 scale model. What is the velocity needed in the model study?

CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) At a certain point in a fluid the shear stress is 0.216 N/m^2 and the velocity gradient 0.267 s^{-1}. If the mass density of the fluid is 1268 kg/m^3, find the kinematic viscosity of the fluid.
b) A "U"- tube manometer containing mercury of density 13600 kg/m^3 is used to measure the pressure drop along a horizontal pipe. If the fluid in the pipe has a relative density of 0.8 and the manometer reading is 0.6m, what is the pressure difference measured by the manometer?

2. a) Derive from basis principles, the continuity equation for one-dimensional flow.
b) A 45^0 reducing bend is connected in pipeline, the diameters at the inlet and outlet of the bend being 400 mm and 200 mm respectively. Find the force exerted by water on the bend if the intensity of pressure at inlet of the bend is 215.8 kN/m^2. The rate of flow is 0.5 m^3/s.

3. a) What do you mean by " equivalent pipe" and " flow through parallel pipes"?
b) A 150mm X 75mm Venturimeter with a coefficient of discharge 0.98 is to be replaced by an orificemeter having a coefficient of discharge 0.6. If both the meters are to give the same differential mercury manometer reading for a discharge of 100 litres per second and the inlet diameter is to remain 150mm, what should be the diameter of the orifice.

4. a) Show that the maximum efficiency that can be attained when a jet of water strikes a series of flat plates mounted on a wheel is 50%.
b) A rectangular plate 10cm wide, 25cm long hangs vertically hinged at its top edge. A jet of water 3cm in diameter with a velocity of 10m/s strikes the plate at its centre. Determine the weight of the plate if the jet keeps it steadily inclined at 30^0 to the vertical.

5. a) Discuss the various types of hydropower stations.
b) Explain how the hydropower potential of a river is estimated.

6. a) Differentiate between : (i) Impulse and reaction turbines (ii) Radial and axial flow turbines and (iii) Kaplan and propeller turbines.
b) What is a draft tube? Why is it used in a reaction turbine? Describe with sketch two different types of draft tubes.

7. a) What do you understand by the characteristic curves of a turbine? Name the important types of characteristic curves.
b) A water turbine develops 130KW at 230r.p.m, under a head of 16m. Determine the scale ratio and the speed of a similar machine which will generate 660KW when working under a head of 25m.

8. a) A centrifugal pump is discharging 0.03 m^3/s of water against a total head of 20m. The diameter of the impeller is 400mm and it is rotating at 1500 rpm. Calculate the head, discharge and ratio of powers of a geometrically similar pump of diameter 250mm when it is running at 3000 rpm.
b) What are air vessels and what is their function in reciprocating pumps.

CODE No.:10BT30201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

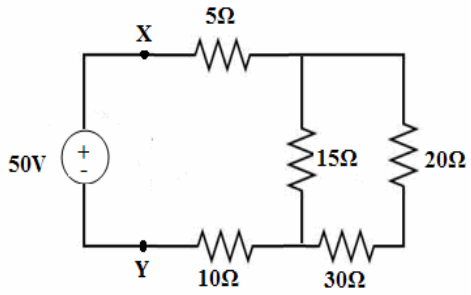
ELECTRICAL CIRCUITS

[Electrical and Electronics Engineering]

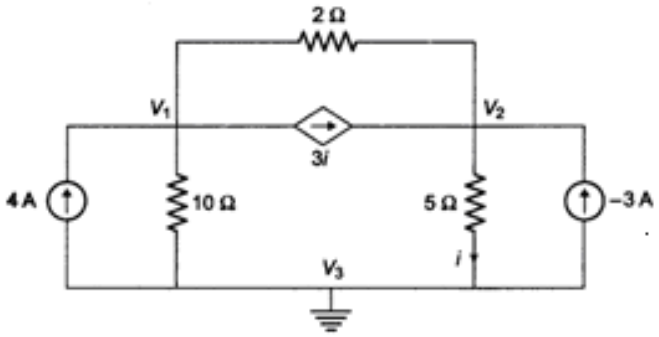
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

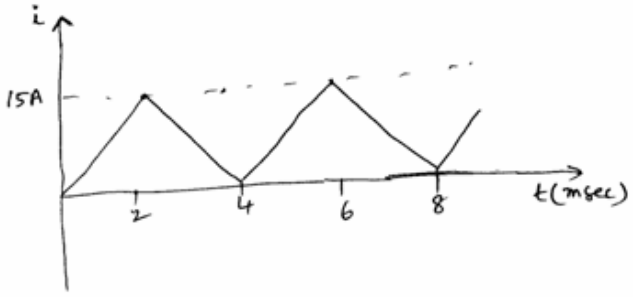
1. a) Compare the ideal and practical voltage sources.
b) Explain the terms: Active elements and Passive elements.
c) Find the resistance across the terminals X-Y and hence find the current in each branch of the circuit shown below.



2. Use nodal analysis technique to determine current '*i*' in the network shown in below figure.



3. a) List out the merits and demerits of AC supply
b) Define the R.M.S value and average value of an alternating quantity and determine the same for the wave shape as shown in below figure

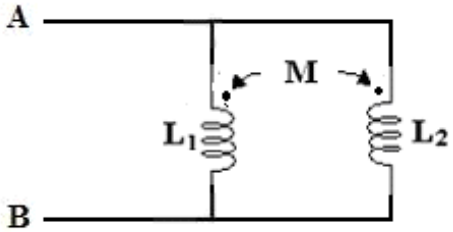


4. a) Show that the resonant frequency is the geometric mean of two half power frequencies.
b) A parallel circuit consists of two branches Z_1 and Z_2 and is connected to a supply of 220V, 50Hz. Branch 1 consists of a resistance of 10Ω in series with an inductance of 0.1H. Branch 2 consists of a resistance of 5Ω in series with a capacitance of 50μF. Find the total current drawn from the supply. What is the overall power factor of the combination.

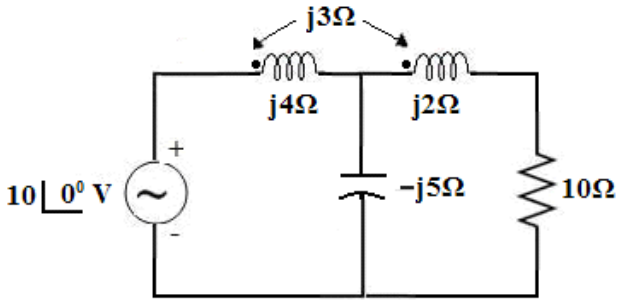
5. a) Derive the relation between line and phase quantities in balanced Star connection

b) If $Z_1 = 15\angle -30^0$, $Z_2 = 20\angle 80^0$ and $Z_3 = 10\angle 90^0$ ohms are the impedances connected in the form of delta and the supply voltage is 415V. Assume the RYB sequence and so find the phase currents, line currents and the total power absorbed.

6. a) Obtain the equivalent inductance L_{eq} between terminals A and B in the network shown below

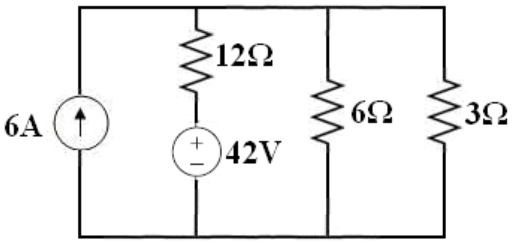


b) Find the voltage across the 10Ω resistor in the network shown below.



7. a) State and explain the Superposition theorem.

b) In the circuit shown below, find the current in the 3 ohms resistor using Thevenin's theorem.



8. a) State and explain Tellegens 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) Supplementary Examinations June - 2013

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 the expression for the magnetic force developed in linear magnetic system.

2. a) Explain the action of commutator in detail.
b) Calculate the number of conductor required on the simplex wave wound armature of 6-pole generator to generate an e.m.f of 500V at a speed of 750rpm, when the flux per pole is 0.02 wb. Also calculate the e.m.f generated when the speed is 1000 rpm for the same value of useful flux per pole.

3. a) List out the possible reasons for a DC generator fails to build up voltage when run at rated speed.
b) A separately excited generator supplies 80 A at 240 V when running at 1200 rpm. Suddenly, the speed drops to 1000 rpm and there is a 5% decrease in field flux. Find the load current under new conditions. Assume that $R_a = 0.1\,\Omega$. What would be the terminal voltage?

4. a) What is armature reaction? Describe the effects of armature reaction on the operation of dc Machines. How the armature reaction is minimized?
b) Explain clearly the functions of the following in dc machines
(i) Interpoles (ii) Compensating winding

5. a) Explain the parallel operation of DC compound generators.
b) Describe the function of equalizing rings in DC generators.

6. a) Derive the torque equation of a dc motor and explain the types of torques in the motor.
b) A belt driven dc shunt generator runs at 1500 rpm delivering 10KW at 220V brushes. The belt breaks, following which the machine operates as a motor drawing 2KW power. What will be its Speed as a motor? The armature and field resistances are 0.25Ω and 55Ω respectively. Ignore armature reaction and assume the contact drop at each brush to be 1V.

7. a) Explain Ward-Leonard system of speed control of dc machines. What are its disadvantages?
b) What are the drawbacks of 3-point starter? Describe a 4-point starter with a neat sketch.

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) Supplementary Examinations June - 2013

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 emf and electric power.
b) Three resistances of values 6, 10 and 16 Ω respectively are connected in parallel. The current flow in the circuit is 20A. Determine the current in each resistance.

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

3. a) Derive average value from the fundamental wave.
b) Explain about RLC series circuit with vector diagram.

4. a) What are the advantages of poly phase systems?
b) Three equal impedances are star connected to a 3-phase, 400 V, 50 Hz supply. If the inductive reactance and resistance of each branch are 8Ω and 6Ω respectively, find
(i) impedance of each phase and
(ii) power consumed.

5. a) Explain about constructional features of DC Machine.
b) Find the torque in N-m exerted by a 4-pole series motor whose armature has 1200 conductors connected up in a 2-circuit winding. The motor current is 10A and the flux per pole is 0.02 Wb.

6. Explain OC and SC tests on single phase transformers.

7. Explain the principle of operation of
a) Shaded pole motor and
b) Capacitor start single phase induction motor.

8. a) Classify different types of voltage and current measuring instruments and give one application of each.
b) With the help of a neat sketch explain the construction and operation of a repulsion type moving iron instrument.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

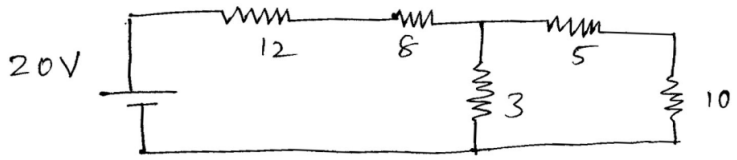
FOUNDATIONS OF ELECTRICAL ENGINEERING

[Computer Science and Systems Engineering]

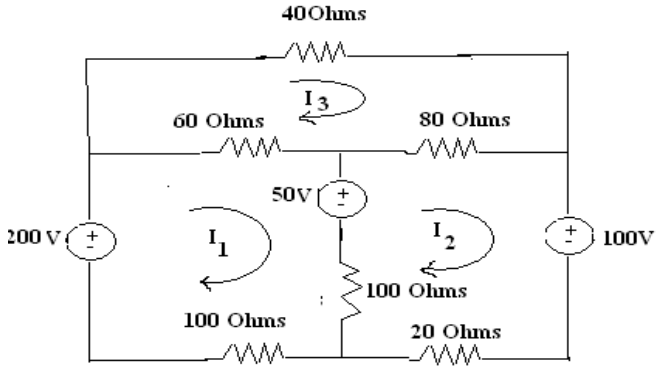
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

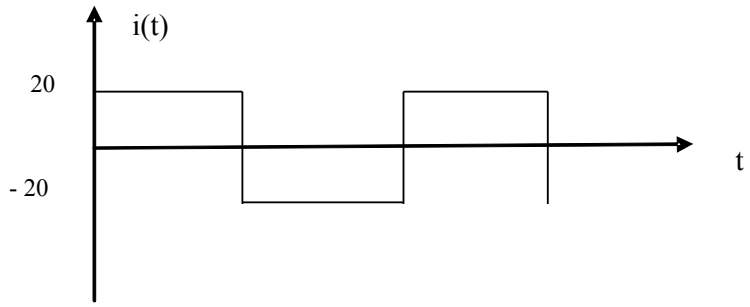
1. a) Explain the terms resistance, inductance capacitance and power.
b) Determine the currents through every resister in the circuit below.



2. a) Define the following terms
i) Node ii) Path iii) Loop iv) Branch
b) Using mesh current analysis, find the mesh currents in the given circuit



3. a) Compute the rms value of the following waveform with time period of 2 msec :



b) A balanced star connected load of (2+j5) ohms in each phase is connected across 115 V, 3-phase , 50 Hz supply. Determine the phase and line values of voltage and power consumed by each phase.

4. a) Enumerate the parts of a D.C. machine. List out various losses present in D.C Machine.
b) Derive the torque equation of a D.C. motor.

5. a) Explain the principle of operation of a transformer. What are different application of transformers.
b) A 6-pole, 50 Hz,3-phase induction motor has a full load slip of 0.04. Compute the frequency of rotor currents.

6. a) Explain the principle of operation of Permanent Magnet Moving Coil (PMMC) meter with the help of neat diagram.
b) How extension of range of ammeter and voltmeter is accomplished? Explain.

7. a) Define the following i) System ii) Control System
b) Briefly explain about the classification of control systems.

8. a) State and explain mason's gain formula for the signal flow graph.
b) What are differences between block diagram reduction and signal flow graph reduction?

CODE No.:10BT30223

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

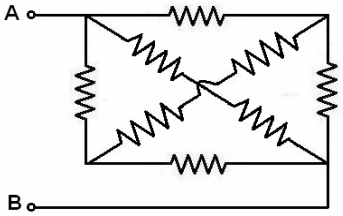
CIRCUIT THEORY

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

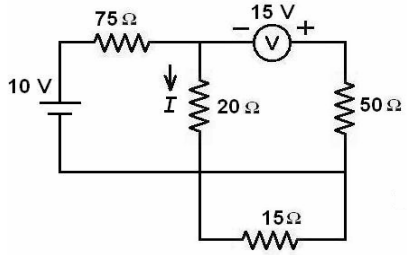
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

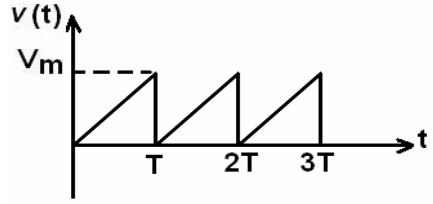
1. a) Differentiate between independent and dependent sources. What is their circuit representation?
b) Find the equivalent resistance between AB in the circuit shown in figure. All resistances are equal to 1Ω.



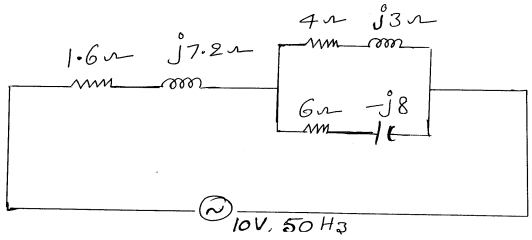
2. a) Define node, path, loop and branch.
b) For the circuit shown in figure, find the current through 20 Ω resistor.



3. a) Draw the wave forms and phasor representation of voltage, current for Resistor, inductor and capacitor with sinusoidal excitation.
b) Find the average and effective values of the saw tooth wave form shown in figure below.



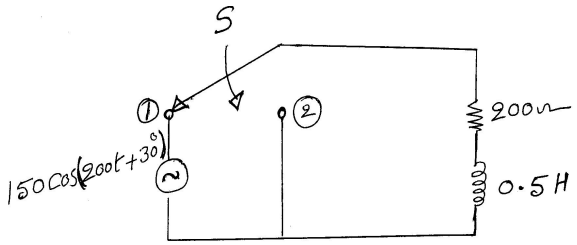
4. a) Derive the expression for power in a single phase A.C circuits.
b) Find the following for a series parallel circuit shown below



i) Total impedance
ii) Current drawn from supply
iii) Power factor
iv) Apparent, active and reactive powers
v) Total admittance
Also draw the phasor diagrams

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

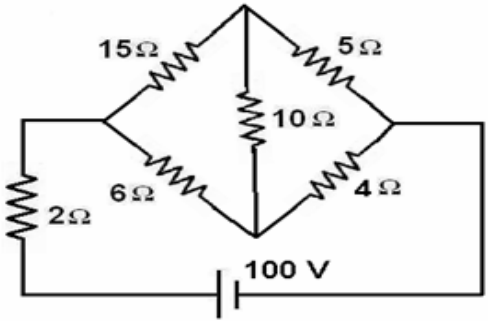
b) For the circuit shown below determine the transient current when the switch is moved from position 1 to position 2 at t=0.The circuit is in steady state with a switch in position 1. The voltage applied to the circuit V=150 cos(200t + 30) v.



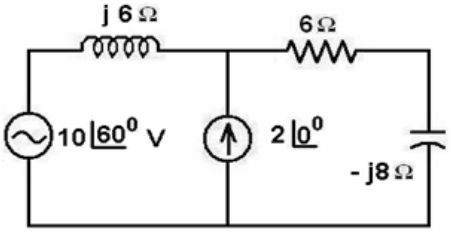
6. a) Explain concept of self and mutual inductance and write about dot rule.

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) Find the current through 10 Ω resistor using Thevenin's Theorem.

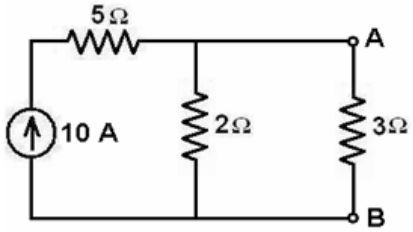


b) Find the current through 6Ω resistor using Superposition theorem as shown in figure.



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 June - 2013

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) Explain the types of elements in detail.
b) Write short notes on star - delta transformation. If R_{ab} ,R_{bc} and R_{ca} are connected in delta, derive the expression for equivalent star connection.

2. a) What is basic types of D.C machine and explain construction and working principle on which a generator works.
b) An 8-pole lap wound generator armature has 960 conductors, a flux of 40 mwb and a speed of 400 r.p.m. Calculate the e.m.f generated on open circuit. If the same armature is wave wound, at what speed must it be driven to generate 400 volts?

3. a) Derive the EMF equation of a single phase transformer and explain the voltage transformation ratio.
b) A 30 KVA single phase transformer has an iron loss of 457 watts and copper loss of 125 watts when delivering half of the load. At what percentage of load will the transformer have maximum efficiency?

4. a) Define slip. Explain the slip - torque characteristics of induction motors.
b) Establish the relationship between number of poles, frequency and synchronous speed for a 3- phase alternator.

5. a) What is electronics and explain the effect of temperature on diode characteristics?
b) Explain how a p-n junction diode acts as a rectifier and derive the current equation of a p-n junction diode.

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. Explain the concept of induction heating and also discuss about various industrial applications of induction heating.

8. a) Draw a basic block diagram of a CRO and explain the features of CRO in details.
b) How do you measure frequency of an unknown signal using CRO? Explain.

CODE No.:10BT30301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

STRENGTH OF MATERIALS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and explain Hooke's law.
b) A metallic rod of 1 cm diameter, when tested under an axial pull of 10 kN was found to reduce its diameter by 0.0003 cm. The modulus of rigidity for the rod is 51 kN/mm^2. Find the Poisson's ratio, modulus of elasticity and Bulk Modulus.

2. A simply supported beam of length 8m rests on supports 5 m apart, the right hand end is overhanging by 2 m and the left hand end is overhanging by 1 m. The beam carries a uniformly distributed load of 5 KN/m over the entire length. It also carries two point loads of 4 KN and 6 KN at each end of the beam. The load of 4 KN is at the extreme left of the beams, whereas the load of 6 KN is at the extreme right of the beam. Draw SFD and BMD for the beam and find the points of contraflexure.

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

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

5. A solid cylindrical shaft is to transmit 300 kW power at 100 r.p.m.
i) If the shear is not to exceed 80N/mm^2, find its diameter.
ii) What percent saving in weight would be obtained if this shaft is replaced by a hollow one whose internal diameter equals to 0.6 of the external diameter, the length, the material and maximum shear stress being the same?

6. A beam ABC of length 9 m has one support at the left end and the other support at a distance of 6m from the left end. The beam carries a point load of 12 KN at right end and also carries a uniformly distributed load of 4 KN/m spread over a length of 3m starting from a point 3m from left end. Determine the slope and deflection at point C.

7. A thin cylindrical shell with following dimensions is filled with a liquid at atmospheric pressure: Length = 1.2 m, external diameter = 20 cm, thickness of metal = 8 mm. Find the value of the pressure exerted by the liquid on the walls of the cylinder and the hoop stress induced if an additional volume of 25 cm^3 of liquid is pumped into the cylinder Take E = 2.1×10^5 N/mm^2 and l/m = 0.33.

8. a) Write brief note on compound cylinders.
b) Find the thickness of metal necessary for a steel cylindrical shell of internal diameter 200 mm to withstand an internal pressure of 50N/mm^2. The maximum hoop stress in the section is not to exceed 150N/mm^2.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

MATERIALS SCIENCE AND METALLURGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss various types of bonds in solids and explain them with examples.
b) Give the properties of covalent bonded solids and explain briefly.

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

3. Explain Iron-Iron carbide diagram in detail.

4. Explain any two surface hardening methods.

5. Explain polyphase and substitution in copper alloys.

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

7. Give the properties and applications of Abrasive materials & Cermets.

8. Explain the following terms
a) Hot pressing b) Blending c) Atomization

CODE No.:10BT30303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

THERMODYNAMICS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Identify the type of system (open, closed or isolated) for the following:
i) Heating of a metal block, ii) Universe, iii) An air compressor system,
iv) Gas turbine, v) Heat exchanger,
vi) Gas in a cylinder and piston arrangement and (vii) Solar water heater.

b) The work supplied to a closed system is 160 kJ. The initial volume is $v_1 = 0.80$ m^3 and the pressure of the system changes as $P = 7 - 3.v$ where P is in bar and v is in m^3. Determine the final volume and pressure of the system.

2. a) Derive the equation for first law applied to a cyclic process and for change of a state?

b) A steam turbine operates under steady flow conditions receiving steam at 15 bar pressure, 2700 KJ/Kg Internal energy and 0.17 m3/Kg specific volume 100 m/s velocity. The exhaust of steam from the turbine is at 0.1 bar with internal energy 2175 KJ/Kg, specific volume of 15 m^3/kg and velocity 300 m/s. The intake is 3 meters above the exhaust. The turbine develops 35 KW power and heat losses over the surface of turbine is 20 KJ/Kg. Determine the steam flow rate through the turbine.

3. a) Derive the efficiency of Carnot cycle in terms of temperature limits? Why it is impracticable?

b) A Heat pump provides $3x10^4$KJ/hr to maintain a dwelling at 23^0C on a day when the outside temperature is 0^0C. The power input to the heat pump is 4 KW. Determine the COP of heat pump and compare it with the COP of a reversible heat pump operating between the reservoirs at the same two temperatures?

4. a) Establish the inequality of Clausius. Give the criteria of reversibility, irreversibility and impossibility of a thermodynamic cycle.

b) In a reversible cycle 100 kJ of heat is received at 500 K, then an adiabatic expansion occurs to 400 K at which 50 kJ of heat is received. Then a further adiabatic expansion to 300 K at which temperature 100 kJ of heat is rejected. Find the change in entropy which occurs as the system is restored to its initial state in remainder of the cycle.

5. a) Write short notes on (i) Degree of superheating and (ii) Degree of subcooling

b) Steam at 0.75 MPa, 240^0C and flowing at the rate of 1.1 kg/sec passes into a pipe carrying wet steam at 0.75 MPa, 0.9 dry. After adiabatic mixing the flow rate is 2.2 kg/sec. Determine, the condition of the steam after mixing. If the mixture now expands through a frictionless nozzle in a isentropic process to a pressure of 0.42 MPa. Determine the velocity of the steam leaving the nozzle. Neglect the velocity of the steam in the pipeline.

6. Process 1: Air initially at 100 kPa and 50^0C undergoes reversible adiabatic compression such that its volume is reduced to 20% of its initial volume:
Process 2: Then 940 kJ/kg of heat is added to this air at constant volume.
Process 3: Process 2 is followed by reversible adiabatic expansion up to initial volume.
Process 4: Finally heat is rejected at constant volume so as to reach the initial condition.

Draw the four processes on one PV diagram. Determine the maximum temperature, and heat rejected per kg of air. Assume adiabatic index of compression and expansion of 1.4 and constant volume specific heat as 0.717 kJ/kg ^{0}K.

7. a) Obtain an expression for entropy of Mixture in terms of component values.
   b) Explain how volumetric analysis is carried out for estimation of properties.

8. a) Define the following: i) DBT ii) WBT iii) DPT iv) Relative humidity
   v) Specific Humidity vi) Degree of saturation vii) Adiabatic saturation
   b) Atmosphere air at 1.01325 bar, 32^0C DBT, 26^0C WBT.
   Compute i) partial pressure of water vapour ii) specific humidity
   iii) DPT iv) Relative humidity v) Degree of saturation vi) Density of air in the mixture
   vii) Density of vapour in the mixture viii)Enthalpy of the mixture.

CODE No.:10BT30401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

SEMICONDUCTOR DEVICES AND CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the formation of depletion region in an open circuited p-n junction with neat sketches.
b) A p-n junction diode has a reverse saturation current of 30 mA at a temperature of 125^0C . At the same temperature, find the dynamic resistance for 0.2V bias in forward and reverse direction.

2. a) Draw the circuit diagram of FWR with inductor filter. .
b) A full wave rectified voltage of 18V peak is applied across 500mF filter capacitor. Calculate the ripple and DC voltages if the load makes a current of 100mA.

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) Explain diode compensation circuit for variations in V_{BE} for self bias circuit.
b) Derive an expression for stability factor S' in self bias circuit.

5. Draw the small signal equivalent circuit for CE transistor amplifier and deduce the expressions for current gain, input impedance, output impedance and voltage gain with and without voltage source.

6. a) With neat structure explain the principle of operation of depletion MOSFET.
b) Explain drain characteristics of JFET.

7. a) Derive an expression for voltage gain, input impedance and output impedance of CC amplifier at low frequencies.
b) In an N - channel JFET based voltage divider common drain configuration, determine the value of resistor R_S so as to have the operating point as I_{DQ} = 5 mA, V_{DSQ} =10 V. Given that V_{DD} = 28 V, R_1 1 M ohms, R_2 = 0.5 M ohms, saturation drain current of the FFET is 10 mA and gate source pinch off voltage is -5V.

8. Explain about tunneling phenomenon using energy band diagrams.

CODE No.:10BT30402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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 rifleman can achieve a "Marksman" award if he passes a test. He is allowed to fire six shots at a target's bull's eye. If he hits the bull's eye with atleast five of his six shots he wins a set. He becomes a marksman only if he can repeat the feat three times straight, that is; if he can win three straight sets. If his probability is 0.8 of hitting a bull's eye on any one shot, find the probability of becoming a Marksman.

2. a) Define Rayleigh density and distribution function and explain them with their plots.
b) Define and explain the Gaussian random variable in brief.
c) Determine whether the following is a valid distribution function.
F(x) = 1-exp (-x/2) for x=0 and 0 else where.

3. a) State and prove Chebyshev's inequality.
b) Find the expected value of the function $g(X)=X^3$ where X is a random variable defined by the density $f_x(x) = \left(\frac{1}{2}\right)u(x)\exp(-x/2)$.

4. a) Define conditional distribution and density function of two random variables X and Y.
b) State the Central Limit theorem.
c) Three statistically independent random variables X_1, X_2, and X_3 are defined by

$\bar{X}1 = -1$ $\quad \sigma^2_{x1} = 2.0$
$\bar{X}2 = 0.6$ $\quad \sigma^2_{x2} = 1.5$
$\bar{X}3 = 1.8$ $\quad \sigma^2_{x3} = 0.8$

Write the equation describing the Gaussian approximation for the density function of the sum $X= X_1+X_2+X_3$.

5. a) Two random variables having joint characteristic function
$\phi_{XY}(\omega_1, \omega_2)= \exp(-2\omega^2_1-8\omega^2_2)$. Find moment's m_{10}, m_{01}, m_{11}.
b) Gaussian random variables X and Y have first and second order moments $m_{10}=-1.1$, $m_{20}=1.16$, $m_{01}=1.5$, $m_{02}=2.89$, $R_{XY}=-1.724$ find C_{XY}, ρ.

6. a) State and prove central limit theorem.
b) Random variables X and Y have the joint density $f_{(X,Y)}(x,y) = (1/12)\, u(x)\, u(y)\, e^{-(x/4)-(y/3)}$
Find $P\{2<X\leq 4,-1\leq Y\leq -2\}$ and $P\{0<X<\infty,-\infty<Y\leq -2\}$.

7. a) A gaussian random process is known to be a WSS process with mean $\overline{X} = 4$ and $R_{xx}(\tau) = 25e^{-3|\tau|}$ where $\tau = \frac{|t_k - t_i|}{2}$ and i, k=1, 2. Find joint Gaussian density function.
b) Find the autocorrelation of a Poisson random process.

8. a) Explain the power density spectrum and its properties
b) Derive the relationship between power spectrum and autocorrelation.

CODE No.:10BT30403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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

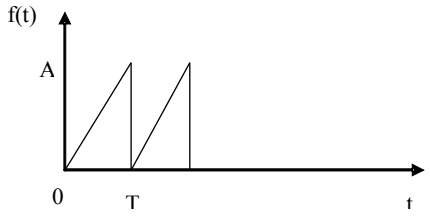
1. a) Evaluate the following Integrals

i) $\int_0^5 \delta(t) Sin 2\pi t dt$ ii) $\int_0^{\alpha} e^{-\alpha t^2} \delta(t-10) dt$

b) What is a signum function and sketch the signal.
f(t) = 3u(t) + t u(t) − (t − 1)u(t − 1) − 5u(t − 2).

2. a) Write the Drichlets conditions.

b) Find the Trigonometric fourier series for the given periodic wave form



3. a) Find the Fourier transform of the following

(i) x(t) = A sin ($2\pi f_c t$) U(t) (ii) x(t) = A rect(t/T) cos ($2\pi f_c t$)

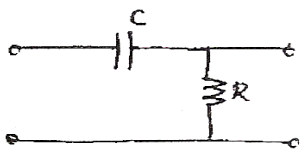
b) State and prove the multiplication in time domain property of Fourier transform.

4. a) Explain how input and output signals are related to impulse response of LTI system.

b) Let the system function of a LTI system is $H(j\omega) = \frac{1}{j\omega + 2}$. What is the output of the system for an input $e^{-t}u(t)$.

5. a) Define LTI system. Determine whether the following system is LTI system or not
$y(t) = 2x(t-1)$

b) Determine the step response of the following electrical system.



6. a) Obtain the Z transform of ROC of the following :

(i) $x(n) = 3^{n}$ for $n \geq 0$

$= 3^{-n}$ for $n < 0$.

(ii) $x(n) = (1/3)^{-n}$

(b) Determine the inverse Z transform of the function given by $X(Z) = \dfrac{10}{(1 - 0.5Z^{-1})(1 - 0.25Z^{-1})}$.

7. a) Determine the Laplace transform and sketch the pole-zero plot of the following signals

(*i*) $x(t) = e^{-t}\cos(2t)$ (*ii*) $te^{-t}u(t)$

b) Obtain the inverse transform of $F(s) = \dfrac{1}{s(s+10)(s-3)}$ using partial fraction method.

8. a) What is meant by ROC of Z- Transform? Explain its significance?

b) Determine Z- Transform of a signal $x(n) = (2/3)^{n} u(n) + (-1/2)^{n} u(n)$. and Plot ROC and pole-Zero locations of X(z)

CODE No.:10BT30421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

ELECTRONIC DEVICES AND CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain different Breakdown mechanisms in PN junction diodes.
b) Write the diode current equation & explain.

2. a) Explain circuit diagram of a full wave rectifier using center tap transformer and draw the waveforms.
b) Derive the ripple factor for L section filter using centre tap transformer full wave rectifier.

3. a) Discuss the different current components in a transistor and define large signal current gain and small signal current gain.
b) In a NPN transistor $\alpha = 0.98$, $I_{CO} = 20\ \mu A$, $I_B = 100\ \mu A$, determine I_C.
If $\alpha = 0.9$ transistor is used and all others remain same what is I_C.

4. a) A NPN transistor is used in self-biasing (voltage-divider bias) arrangement. The circuit components are $V_{CC} = 4.5V$, $R_C = 1.5\ K\Omega$, $R_E = 0.27\ K\Omega$,
$R_1 = 27\ K\Omega$, $R_2 = 4.5\ K\Omega$, $\beta = 50$. Determine stability factor and operating point (V_{CE}, I_C).
b) Discuss the diode bias compensation against V_{BE} variations.

5. Derive the expressions for voltage gain, current gain, input impedance, output impedance, voltage gain with respect to source and current gain with respect to source for generalized transistor amplifier at low frequencies.

6. a) With neat sketch explain the characteristics of MOSFET in enhancement mode.
b) Draw the circuit diagram of common source amplifier and derive equation for gain of the amplifier.

7. a) Draw the block diagrams of various feed back amplifier Circuits.
b) Derive resonant frequency for RC phase shift oscillator.

8. Write short notes on :
(i) Tunnel Diode.
(ii) UJT.
(iii) Varactor Diode.

CODE No.:10BT30422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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) Perform the following operations to find out X, $(468)_8 = (X)_2$ and $11001.011 = (X)_{16}$.
b) Compare BCD and binary system of coding.

2. a) What is AOI logic and Universal logic? Draw logic diagrams to realize NAND and NOR gates and explain its significance.
b) Reduce the following expressions
(i) XY+XY+Y+Y (ii) ABCA'B'.

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.
$f = \prod M (1,2,3,8,9,10,11,15) + d (7,1,5)$

4. a) Design a Half Adder using basic gates and explain its truth table.
b) With logic diagram explain how a Demultiplexer can be obtained from a Decoder.

5. a) Explain the circuit diagram of a S-R flip flop using 2- input NOR gates.
b) Explain State diagram and State table.

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 and (iii) bidirectional.
b) Explain the differences between Ring and Johnson counters. Design and explain the operation of a decade Johnson counter.

7. a) Explain RAM technology.
b) Implement $F_1 (a,b,c,d) = \sum m(0,1,2,3,6,9,11)$ using PAL.

8. a) Design a D - type positive edge triggered flip flop. Also show the operation of the sequential Circuit when CP=1.
b) Write short notes on hazards in sequential circuits.

CODE No.:10BT30501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

DISCRETE MATHEMATICAL STRUCTURES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Show the equivalence: P ->(Q->P) ⇔ P->(P->Q).
b) Obtain the principal corrective normal form of (¬PV¬Q) -> (P⇔¬Q).

2. a) Show that $\rceil(P \wedge Q)$ follows from $\rceil P \wedge \rceil Q$
b) Show that $\rceil P(a,b)$ follows logically from (x) (y) (P(x, y) $\rightarrow W(x,y)$) and $\rceil W(a,b)$.

3. a) Draw the Hasse diagram of the set{3, 9, 27, 54} under the partial ordering relation "divides", and indicate those which are totally ordered.
b) Using recursion, define the multiplication function '*' given by $g\langle x, y\rangle = x * y$.

4. a) On the set Q of all rational numbers, the operation * is defined by a * b = a + b - ab. Show that, under this operation, Q forms a commutative monoid
b) Let F: G $\rightarrow$ H be a homomorphism from G onto H. If G is abelian, verify that H is also abelian.

5. a) Prove that $1^2 + 2^2 + \ldots + n^2 = n(n+1)(2n+1)/6$ whenever n is a positive integer.
b) How many ways are there for 10 women and six men to stand in line so that no two men stand next to each other?

6. a) Find the general solution of the recurrence relation $a_n - 7a_{n-2} + 10_{n-4} = 0$, for n ≥ 4.
b) Solve $a_{n+1} = a_n + (2n + 3)$ for n ≥ 0, $a_0 = 1$ by the method of generating function.

7. a) State the properties of the following graphs :
(i) Reflexive (ii) symmetric (iii) transitive (iv) antisymmetric
b) If G is a connected plane graph then show that | V | - | E |+ | R | = 2.

8. a) Explain Breadth first search and Depth first search algorithm for a spanning tree.
b) Explain Kruskal's algorithm for finding minimal spanning tree.

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CODE No.:10BT30502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

DATA STRUCTURES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Give the definition of data structure? Give its classifications?
b) Explain about quick sort with suitable example? Give its implementation in C?

2. a) Write a program to concatenate 2 double linked list into a list? After concatenation 3 list must exists?
b) Write a program to insert a node in the middle of a circular linked list?

3. a) Give the implementation of stack using linked list in C?
b) Give the applications of stack?

4. A program, Prog1, written by one of the programmer in an IT organization uses an implementation of the sequence ADT (data structure like an array, linked list) as its main component. It performs atRank, insertAtRank and remove operations in some unspecified order. It is known that Prog1 performs n^4 atRank operations, $5n^2$ insertAtRank operations, and $7n^3$ remove operations. Which implementation of the sequence ADT should the programmer use in the interest of efficiency: the array-based one or the one that uses a doubly-linked list?
Note: atRank(5) operation will return 5^{th} element in the sequence ADT
inserAtRank(8, x) operation will insert x in the 8^{th}
delete(x) operation will delete x if it exists in the sequence ADT.

5. a) Show diagrammatically an AVL tree of maximum possible height with 20 nodes. Your diagram should be clear with *balance factor* indicated for each node.
b) Show diagrammatically an AVL tree of minimum possible height with 20 nodes. Your diagram should be clear with *balance factor* indicated for each node.

6. Discuss various cases, with simple illustrations, that arises when a new key is inserted into a B Tree of order *m.*

7. a) Compare and distinguish linear search with binary search with an example.
b) If 'n' integers are arranged in an array with ascending order, then devise optimal strategy to find out whether any integer x is there in this array. Show that log n comparisons will be sufficient for your strategy.

8. For the data {17, 9, 34, 56, 11, 71, 86, 55, 22, 10, 4, 39, 49, 52, 82, 13, 40, 31, 35, 28, 44} using hash function *h(x) = x mod 9*, when the hash table is having 9 buckets, do the following. Give appropriate diagrams.
a) Create the hash table implemented using *linear open addressing* when each bucket can hold three data elements.
b) Create a chained hash table.

CODE No.:10BT31001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

THERMODYNAMICS AND FLUID MECHANICS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

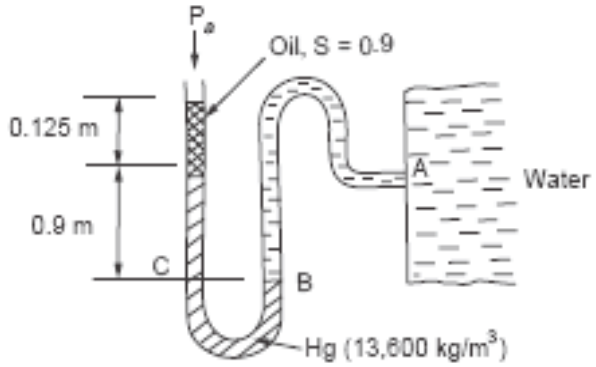
1. a) What do you understand by microscopic and macroscopic view points?
b) What are intensive and extensive properties?

2. Explain the working principle with neat sketches of Single and multistage compressors.

3. a) Describe the different properties of steam.
b) Compare and contrast between boiler mountings and accessories.

4. a) Explain how the psychrometric chart and p-h chart are useful in air-conditioning and refrigeration systems.
b) Explain the concept of black body in radiation.

5. a) A manometer is fitted as shown in figure below. Determine the pressure at point A with respect to datum at B, pressure at left hand side = pressure at right hand side.



b) Define absolute pressure and Gauge pressure.

6. a) Explain methods of dimensional analysis.
b) What is meant by model analysis? Explain briefly.

7. a) Differentiate between single stage and multi stage centrifugal pumps.
b) Give classification of turbines.

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.:10BT32301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

BIO CHEMISTRY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Define structure and properties of different types of carbohydrates.

2. Write about the classification and nomenclature of Enzymes.

3. Give an account on gluconeogenesis. Add a note on its energetics.

4. a) What is a Zwitter ion and explain its properties.
b) Write the classification of amino acids based on their side-chain.
c) What is Urea cycle? Write the reactions and importance of the cycle.

5. a) Overview of biosynthesis of amino acids from glycolysis, TCA cycle and pentose phosphate pathway.
b) Explain Shikimate pathway for the production of aromatic amino acids.

6. a) Write about the biosynthesis of aromatic amino acids.
b) What are aromatic amino acids and write their structures and functions.

7. Discuss the following
a) Functions of triglycerides
b) Oxidation of fatty acids

8. a) Define nucleic acids and describe about Chargaff rule.
b) Sea urchin DNA which is double stranded was shown to contain 17.5% of it's the form of cytosine. What % of the other bases are present in the DNA?

CODE No.:10BT32303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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. Give an account of Microbial Diversity.

3. What are microbial nutrients? Describe the major nutritional types of microorganisms.

4. Discuss the identification of bacterial by using biochemical tests.

5. Explain the Principle and application of Cryopreservation of microbes.

6. Discuss on virulence factors with special reference to tuberculosis.

7. Discuss the applications of viruses in agriculture and medicine.

8. Write a note on:
a) Assay of animal viruses
b) Methods used for identification of viruses.

CODE No.:10BT32304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

FLUID FLOW IN BIOPROCESSES

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Write about the principles of momentum, heat and mass transfer in bioprocesses.

2. a) What is ideal solution and write the governing equation to deal ideal solutions
b) What are the derived quantities? Establishes relation between:
i) Dyne and Newton ii) erg and Joule
c) LPG which is predominantly propane is used as a cooking gas. If a cylinder is filled with 15 Kg of LPG, determine the mole number of the gas in the cylinder.

3. a) Distinguish between laminar boundary layer and turbulent boundary layer.
b) What are the causes which result in separation of boundary layer?

4. a) Explain the Newtonian and non-Newtonian fluids with suitable examples.
b) What is the Newton's law of viscosity and explain the terms involved in it.

5. a) A laminar flow is taking place in a pipe of diameter of 18cm. the maximum velocity is 1.5 m/s. Find the mean velocity and the radius at which this occurs. Also calculate the velocity at 4cm from the wall of the pipe.
b) Write the application of Hagen-Poiseuille equation.

6. a) An aeroplane flies at Mach 0.8 in air at 15^0C and 100 Kpa pressure. Calculate the stagnation pressure and temperature. Take γ=1.4.
b) Explain the process of compressible flow in detail.

7. a) A regenerative heater is packed with a bed of 6 mm cubes. The cubes are poured into the cylindrical shell of the regenerator to a depth of 3.5 m such that the bed porosity was 0.44. If air flows through this bed entering at 25°C and 7 atm abs and leaving at 200°C, calculate the pressure drop across the bed when the flow rate is 500 kg/hr per square meter of empty bed cross section. Assume average viscosity as 0.025 cP and density as 6.8 kg/m^3.
b) Derive the equation for minimum fluidization velocity.

8. a) A U-tube manometer is connected across a pipe and the manometer reads 10 cm. The manometric liquid is mercury of 13600 kg/m^3 density and the following fluid is carbon tetra chloride of 1600 kg/m^3. Calculate the pressure difference in N/m^3
b) Write Working characteristics Centrifugal pump

CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

SWITCHING THEORY & 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 $(ABC)_{16} = (\quad)_2 = (\quad)_8$
b) Find the 2's compliment representation of -15.
c) Find the 10's compliment of $(935)_{11}$
d) What is the use of hamming code? Derive the hamming code for the message 1001.

2. a) Simplify the following Boolean function to a minimum number of literals.
i) $F(A,B,C) = ABC + \overline{A}\overline{B}C + \overline{A}BC + AB\overline{C} + \overline{A}\overline{B}\overline{C}$
ii) $F(A,B,C) = \sum (1,4,5,6,7)$
iii) F (A, B, C) = ð M (3,5,7)
b) Implement $F(x,y,z) = \sum (1,3,6,7)$ using NAND gates only.
c) Obtain the Dual of the following Boolean expressions. AB'C+AB'D+A'B'

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

4. a) Draw and explain the operation of an 2-bit comparator.
b) Realize the following using MUX. F(P,Q,R,S) = Σm (0,1,3,4,8,9,15)

5. Realize the following logical functions using an PLA and also the architecture of the PLA used
i) $F_1(x,y,z) = \Sigma m(0,1,2,4,6)$ and $F_2(x,y,z) = \Sigma m(0,2,6,7)$
ii) $F_1(x,y,z) = \Sigma m(0,1,3,5)$ and $F_2(x,y,z) = \Sigma m(1,3,5,7)$.

6. a) Convert SR Flip-Flop to JK Flip-Flop.
b) Design a counter with the following repeated binary sequence: 0,1,2,4,6. Use D Flip-Flops.

7. a) Discuss about capabilities and limitations of finite state machine.
b) A sequential circuit has two JK flip-flops A and B and one input x. The circuit is described by the following flip-flop input equations :
$J_A = x \quad K_A = B'$
$J_B = x \quad K_B = A$
i) Derive the state equation A(t+1) and B(t+1) by substituting the input equations for the J and K variables.
ii) Draw the state diagram of the circuit

8. a) Explain how the ASM chart differs from a conventional flow chart and also explain the advantages of using an ASM chart over conventional flow chart.
b) Design a Mealy type serial adder using an FSM.

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CODE No.:10BT41001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

ELECTRICAL & ELECTRONIC MEASUREMENTS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With neat diagram describe the construction working principle of PMMC Instrument.
b) A Moving coil instrument whose resistance is 50Ω gives a full scale deflection with a voltage 75mV .This instrument is to be used with series multiplier to extend its range to 30V.Calculate the error caused by 45^0c rise in temperature.

2. a) Describe the basic principle and construction of d.c potentiometer.
b) What is meant by standardization of potentiometer? Describe the procedure of standardization.

3. a) Explain the construction and working principle of an electrodynamometer type wattmeter
b) What are the special features of a wattmeter suitable for working on low power factor circuits? Explain.

4. a) Describe the working of Hay's bridge for measurement of inductance. Derive the equation for balance condition and draw the phasor diagram under balance condition .
b) Explain the working principle of Schering bridge and derive an expression for measurement of unknown capacitor.

5. a) Explain the principle of operation of true RMS reading Voltmeter.
b) Explain the principle of a successive approximation type DVMs.

6. a) Explain the different modes of operations of Frequency, Time, Time Period, Average Time Period?
b) Explain the frequency synthesizer with neat diagram, advantages and disadvantages.

7. a) Explain the function of the following controls
i) Z modulation ii) Astigmatism iii) Delayed sweep iv) ALT I CHOP mode 6.
b) How does the digital storage oscilloscope differ from the conventional storage oscilloscope using a storage cathode ray tube?

8. a) Define harmonic distortion and give a method for its determination
b) With the help of a block diagram explain the working of spectrum analyzer. How does it functionally differ from a wave analyzer?

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

PROBABILITY AND STATISTICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is meant by random experiment? Illustrate using examples.
b) Two dice are tossed. Let X assign to each point the sum of the outcomes on the two dice. Find the probability distribution of X. Find the mean and the variance of the distribution.

2. a) For a probability distribution F(x), show that
i) $P(a < X \leq b) = F(b) - F(a)$
ii) $0 \leq F(x) \leq 1$
iii) $x < u \Rightarrow F(x) \leq F(u)$
iv) $F(+\infty)=1$; $F(-\infty)=0$
b) What is Normal distribution? What are its properties?

3. a) Find the rank correlation coefficient from the following data

Rank in X	1	2	3	4	5	6
Rank in Y	4	3	1	2	6	5

b) The two regression equations of the variable X and Y are
X = 19.13-0.87 Y and Y = 11.64-0.50 X
Find (i) mean of X's (ii) Mean of Y's (iii) The correlation coefficient between X and Y.

4. a) What is meant by simple random sampling?
b) Suppose we have a population of size 5, consisting of: 6, 8, 10, 12 and 14.Taking simple random samples of size 2 with replacement
i) Find the mean and variance of the population
ii) Construct the sampling distribution of the sample mean and also find its mean and variance.

5. a) In a city A 20% of a random sample of 900 school boys had a certain slight physical defect. In another city B, 18.5% of a random sample of 1600 school boys had the same defect. Is the difference between the proportions significant at 0.05 level of significance?
b) The fatality rate of typhoid patients is believed to be 17.26%. In a certain year 640 patients suffering from typhoid were treated in a metropolitan hospital and only 63 patients died. Can you consider the hospital efficient.

6. a) The following data give the number of air-craft accidents that occurred during the various days of a week

Day	Mon	Tue	Wed	Thu	Fri	Sat
No. of accidents	15	29	13	12	16	15

Test whether the accidents are uniformly distributed over the week.

b) The following are the samples of skills. Test the significant difference between the means at 0.05 level

Sample I	71.4	77.7	74.4	74	73.8	-
Sample II	70.8	74.9	74.2	70.4	69.2	72.2

7. a) The data given below are the number of defectives in 10 samples of 100 items each. Construct a P-chart and comment on result.

Sample No:	1	2	3	4	5	6	7	8	9	10
No. of defectives:	6	16	7	3	8	12	7	11	11	4

b) An inspection of 10 samples of size 400 each from 10 lots revealed the following number of defective units: 17, 15, 14, 26, 9, 4, 19, 12, 9, 15. Calculate control limits for the number of defective units and state whether the process is under control or not.

8. A TV repair man finds that the time spent on jobs has an exponential distribution with mean 30 minutes. If he repairs sets on the first come and first served basis and if the arrival of sets is approximately Poisson with an average rate of 10 per 8 hour day, what is repair man's expected idle time each day? Also obtain average number of units in the system.

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

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) Describe the structure of the Earth Atmosphere.
b) Discuss the modification brought about in the earth environment by the Biosphere.

2. a) What are the major mineral resources in India? Give its types and how mining affect the environment.
b) How the modern agricultural practices affect our environment? Explain.

3. a) Write a short notes on desert, crop land and river ecosystems.
b) Define and explain in detail about ecological pyramids.

4. a) Write an essay on Hot spots of Bio diversity.
b) Explain the features of Bio diversity.

5. a) Name the different types of air pollutants. Explain the characteristics and biochemical effects of air pollutants.
b) Write a small essay about Disaster management.

6. a) Enumerate rainwater harvesting methods, currently being adopted, in your localities and try to propose suggestions for improvement.
b) Discuss salient features of Air (prevention and control of pollution) Act, 1981.

7. a) What is population growth and its impacts on environment?
b) What is occupational health hazards explain with an example?

8. a) What are the essential features of environment protection acts.
b) What methods you suggest to the management of an industry which use chemicals on a large scale, in order to reduce pollution?

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

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 how an optimization or a mathematical programming problem can be stated.
b) Discuss about constraint surfaces.

2. a) Find the dimensions of a cylindrical tin (with top and bottom) made up of sheet metal to maximize its volume such that the total surface area is equal to $A_0 = 24\pi$.
b) Find the maxima and minima, if any, of the function
$f(x) = 4x^3 - 18x^2 + 27x - 7$.

3. Solve the following using two phase method
Maximize $Z = 5x_1 + 2x_2 + x_3$
subject to
$x_1 + 3x_2 - x_3 \leq 6,$
$x_2 + x_3 \leq 4,$
$3x_1 + x_2 \leq 7,$
$x_1, x_2, x_3 \geq 0.$

4. Using branch and bound technique solve the following integer problem
Max $Z = 5x_1 + 8x_2$
$s.t.\ x_1 + x_2 \leq 6$
$5x_1 + 9x_2 \leq 45$
$x_1 , x_2 \geq 0$ integer

5. Find the minimum of the function $f = x^5 - 5x^3 - 20x + 5$ by Fibonacci search in the interval (0, 5).

6. Minimize $f(x_1 x_2) = x_1 - x_2 + 2x_1^2 + 2x_1x_2 + x_2^2$ from the starting point $X_1 = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$ using Powell's method.

7. Construct the $_k$ function according to the exterior penalty function approach and complete the minimization of $_k$ for the following problem.
Minimize $f(x) = (x - 1)^2$
Subject to
$g_1(x) = 2 - x \leq 0$
$g_2(x) = x - 4 \leq 0$

8. a) State classification of Multi stage decision process.
b) State two engineering examples of serial systems that can be solved by dynamic programming.

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

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. Define elasticity of demand. Briefly explain the different types of elasticity of demand and their significance.

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. What is meant by Perfect Competition? Explain the features of perfect competition.

4. Discuss the characteristic features of Business.

5. Pass journal entries from the following transactions:

2009 Jan. 1 Started business with cash Rs.2,75,000.
2009 Jan. 2 Purchased goods on credit from Viswa Rs.10,000.
2009 Jan. 3 Sold goods for cash Rs.15,000.
2009 Jan. 4 Bought goods on credit from Yogi Rs.25,000.
2009 Jan. 5 Sold goods to Balaji Rs.15,000.
2009 Jan. 6 Goods returned to Yogi Rs.5,000.
2009 Jan. 7 Sold goods to Ram for cash Rs.2,500.
2009 Jan. 31 Rent paid Rs.3,000.

6. Rathnam has extracted the following Trial Balance from his books on 31st March, 2010.

Particulars of Account Balances	Dr.	Cr.
	Rs.	Rs.
Drawings	16,000	-
Cash	6,760	-
Petty cash	1,000	-
Lease hold land	20,000	-
Opening stock	50,000	-
Salary	12,000	-
Sundry debtors	50,000	-
Wages	40,000	-
Bank	21,000	-
Capital	-	34,000
Rent	9,000	-
Electricity	6,000	-
Motor car	10,240	-
Advertising	9,000	-
Sundry creditors	-	35,000

Purchases	4,00,000	-
Postage and Telephone	3,000	-
Sales	-	6,00,000
Discount	11,400	-
General charges	4,000	-
Petty cash expenses	9,600	-
Suspense account	-	10,000
TOTAL	**6,79,000**	**6,79,000**

You required to prepare Trading , Profit & Loss account and Balance sheet after taking the following adjustments.

1. Closing stock Rs.8,000/-.
2. Depreciation on Motor Car @ 10% p.a.
3. Outstanding salaries Rs.2,000/-.
4. Prepaid Rent Rs.1,500/-.

7. A project requires an initial investment of Rs.25,000 and is likely to generate the following cash flows:

Year	1	2	3
Cash Flows	Rs.10,000	15,000	17,000

Assume discount rate to be 10%. Compute Net Present Value (NPV) of the project.

8. Write a detailed note on Creation of Account Groups, Ledger Creation in Tally.

CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular Examinations May - 2013

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the classification of fluids and give one example for each type of fluid.
b) Calculate the capillary rise in a glass tube of 3.0 mm diameter when immersed vertically in (i) water and (ii) mercury. Take surface tensions for mercury and water as 0.0725 N/m and 0.52 N/m respectively in contact with air. Specific gravity for mercury is given as 13.6.

2. a) Explain different types of fluid flows.
b) A horizontal conical water pipe has a diameter of 1.2 m at the larger end and 0.6 m diameter at the smaller end. The pressure head at the larger end is 15 m of water and at the smaller end 12 m of water. Find the discharge through the pipe.

3. a) What is a Pitot-tube? How will you determine the velocity at any point with the help of Pitot-tube?
b) A 30 cm x 15 cm venturimeter is inserted in vertical pipe carrying water, flowing in the upward direction. A differential mercury-manometer connected to the inlet and throat gives a reading of 30 cm. Find the discharge. Take Cd = 0.98.

4. a) Obtain an expression for the force exerted by a jet of water on a moving vertical plate in the direction of jet.
b) A jet of water of diameter 50 mm moving with a velocity of 20 m/s strikes a fixed plate in such a way that the angle between the jet and the plate is 60^o. Find the force exerted by the jet on the plate in the direction of the jet.

5. a) Explain Flow duration curve and mass curve.
b) The following data is available for a hydro power plant:
Available head=140 m, catchment area= 2000 sq.km, annual average rainfall=145 cm, turbine efficiency=85%, generator efficiency=90%, percolation and evaporation losses= 16%. Determine the following:
i) Power generated
ii) Suggest the type of turbine to be used if runner speed is to be kept below 240 rpm.

6. a) Explain the construction and working of Kaplan turbine.
b) A Francis turbine operates under a head of 30 m consuming 5 litres per sec running at a speed of 1200 r.p.m. What will be the flow rate and expected speed if the head drops to 29 m.

7. a) Obtain an expression for unit speed, unit discharge and unit power for a turbine.
b) A turbine develops 7357.5 k W S.P. when running at 200 r.p.m. The head on the turbine is 40 m. If the head on the turbine is reduced to 25m, determine the speed and power developed by the turbine.

8. a) Differentiate between the volute casing and vortex casing for the centrifugal pump.
b) A centrifugal pump is running at 1000 r.p.m. The outlet vane angle of the impeller is 30^0 and velocity of flow at outlet is 3 m/s. The pump is working against a total head of 30 m and the discharge through the pump is $0.3m^3$ / s. If the manometric efficiency of the pump is 75 %,
Determine: i) the diameter of the impeller, and ii) the width of the impeller at outlet.

CODE No.:10BT40101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

STRUCTURAL ANALYSIS - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Direct stresses of 130 N/mm^2 (tensile) and 100 N/mm^2 (compressive) exist on two perpendicular planes at a certain point in a body. They are also accompanied by shear stress on the planes. The greatest principal stress at the point due to these is 150 N/ mm^2. What should be the magnitude of shearing stresses on the two planes? And what will be the maximum shearing stress at the point?

2. A beam of span 6 m is simply supported at the ends A and B. The beam is subjected to two point loads of 25 kN each at a distance of 2 m and 3 m respectively from the left end A. Determine the position and magnitude of maximum deflection. Take E= 2 X 10^5 N/mm^2 and I = 7200 cm^4.

3. A 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. A hollow cast-iron column whose outside diameter is 240 mm and has a thickness of 20 mm is 5.6 m long and is fixed at both ends. Calculate the safe load by Rankine's formula using a factor of safety of 2.8. Find the ratio of Euler's to Rankine's loads. Take $E_{\text{cast iron}}$ = 107 GPa and Rankine's constant = 1/1660 for both ends pinned case and the crushing strength of the material as 565 MPa.

5. A 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:
a) The Maximum Principal Stress Theory
b) The Maximum Shear Stress Theory and
c) 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) Derive an expression for the crippling load of a column with both the ends fixed.
b) Compare the Euler's critical load and Rankin's Critical load of circular column of length 3.6m, diameter 200mm and tube thickness 10mm.Take E=200GPa and Yield stress of the material is 300MPa. Ends of the column are fixed.

7. Determine the shear center of a cross section of uniform thickness 't' which is in the form of an arc of a circle of radius R making angle α at the center of arc. From this solution show that the same for a thin tube with pin hole is 2R.

8. A cantilever beam of symmetrical I section with 2m span is subjected to a concentrated load of 30kN inclined 45^0 to the vertical at the free end of the cantilever. Determine the deflection at the free end of the cantilever. The cross section is symmetrical I section with flange size 125mm X 10mm and web 200mm X 8mm. Take E=200GPa.

CODE No.:10BT40102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

FLUID MECHANICS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is boundary layer? Explain with a neat sketch the development of boundary layer along a flat plate.
b) A thin plate 1mX1m is held parallel to a stream of water moving at a velocity of 2.5m/s. Assuming laminar conditions in the boundary layer at the leading edge of the plate, locate where the boundary layer changes from laminar to turbulent and determine the thickness of the boundary layer and the boundary shear stress at this point.

2. a) Define the most economical section of a open channel. Derive the condition for maximum flow carried in a channel of trapezoidal section.
b) Find the diameter of a circular sewer pipe which is laid at a slope of 1 in 8000 and carrying a discharge of 0.8 m^3/s when flowing half full. Take Manning's N as 0.02.

3. a) Derive dynamic equation for a GVF in a wide rectangular channel.
b) A rectangular channel, 2.0 m wide, carries a discharge of 1.5 cumec. At a certain section of the channel depth of flow is 0.3 m. Determine whether a hydraulic jump will occur and if so, find its height and loss of energy per kg of water.

4. a) Show that the efficiency of a free jet striking normally on a series of flat plates mounted on the periphery of a wheel can never exceed 50%.
b) A jet of water of diameter 7.5cm strikes a curved plate at its centre with a velocity of 20 m/s. The curved plated is moving with a velocity of 8 m/s in the direction of the jet. The jet is deflected through an angle of 165 °. Assuming the plate smooth, find :
i) the force exerted on the plate in the direction of jet
ii) the power of the jet and
iii) the efficiency of the jet.

5. a) Explain the classification of hydraulic turbines, in detail.
b) Obtain an expression for the work done per second by water on the runner of a Pelton wheel.

6. a) What is cavitation ad how it can be avoided in reaction turbines
b) Define the term governing of a turbine. Describe with a neat sketch the working of an oil pressure governor.
c) A turbine develops 7357.5kWS.P, when running at 200rpm. The head on the turbine is 40m. If the head on the turbine is reduced to 25m, determine the speed and power developed by the turbine.

7. a) Derive an expression for the work done by a centrifugal pump on water per second per unit weight.
b) A centrifugal pump rotating at 100 rpm delivers 160 lps of water against a head of 30 m. The pump is installed at a place where atmospheric pressure is $1X\ 10^5$ Pa. (abs) and vapour pressure of water is 3 kPa.(abs). The head loss in suction pipe is equivalent to 0.2 m of water. Calculate minimum NPSH.

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) Regular/Supplementary Examinations May - 2013

REINFORCED CEMENT CONCRETE STRUCTURES - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive an expression for moment of resistance of a rectangular section and find the moment of resistance factor for M 20 grade concrete and Fe 415 grade steel reinforcement. Adopt working stress method of design.
b) A reinforced concrete simply supported rectangular beam of effective span 4.5 m and size 230 mm X 450 mm effective depth is reinforced with 4-12 Ø. Determine the safe uniformly distributed load which the beam can resist in addition to its self-weight. Use M 20 concrete and Fe 415 steel. Adopt working stress method of design.

2. a) Explain Characteristic strength, Characteristic loads and partial safety factors.
b) Estimate the stress block parameters in Limit state method.
c) A singly reinforced concrete beam having a width of 250 mm is reinforced with steel bars of area 3600 mm² at an effective depth of 400 mm. Compute the limiting moment of resistance of the beam. Adopt 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 Fe415 grade steel, design suitable reinforcements in the beam at an effective cover of 60mm.

4. A continuous beam with simple supports has two spans each 5.7 m c/c. The beam is subjected to a characteristic dead load of 20 kN/m and characteristic live load of 25 kN/m. Design the beam and draw the reinforcement detailing.

5. a) Why does the IS 456-2000, require all columns to be able to resist a minimum eccentricity of loading.
b) A column 300 mm X 400 mm has an effective length of 3.5 m. It is subjected to an ultimate load of 1200 kN and an ultimate moment of 240 kNm about its major axis. Determine the longitudinal and transverse reinforcement. Use M30 concrete and Fe 500 grade steel. Assume moderate exposure condition. Sketch the cross-section showing reinforcement details.

6. Design the circular footing for a circular column of 450 mm diameter carrying an axial load of 1500 kN. Assume the bearing capacity of soil is 200 kN/m^2. Use M 20 concrete and Fe 415 steel.

7. Design a two-way slab of clear dimensions 5 m X 6 m with two adjacent edges discontinuous. The slab is subjected to live load of 3.5 kN/m² and floor finish of 0.75 kN/m². Assume the width of supports is 230 mm. Use M 20 concrete and Fe 415 steel.

8. a) What are the various remedial measures for control of cracking?
b) A simply supported doubly reinforced beam of rectangular section 300mm wide and 550 mm overall depth, is reinforced with 4 bars of 25 mm diameter on the tension face and 2 bars of 16 mm diameter on the compression face. Assume mild exposure condition. The beam spans over an effective length of 8 m. Estimate only the long-term deflection. Use M25 concrete and Fe 415 grade steel.

CODE No.:10BT40104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

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) Give in detail different types of stairs indicating their applications.
b) Explain the factors governing the selection of suitable types of floor.

3. a) What are the main components of a floor? Explain the factors governing the selection of a suitable type of floor.
figure 1 What are the advantages and disadvantages of flat roofs and with neat sketches
explain different types of flat roofs.

4. a) Explain the types of organization.
b) Explain the Labour problems and Labour Legislation in India.

5. a) Give the methods to establish quantity of workers productivity and describe ABC classification of materials.
figure 1 Explain the factors affecting the selection of construction equipment and give the
factors affecting cost owning and operating the equipment.

6. a) Explain the methods of planning and scheduling.
b) What is Bar chart? Narrate the various steps for construction of a Bar chart with example.

7. a) Write short notes on (i) redundancies and (ii) cycles, with reference to a network.
b) A project consists of three operations E, L and F. The network as shown in figure 1 shows the sequence.

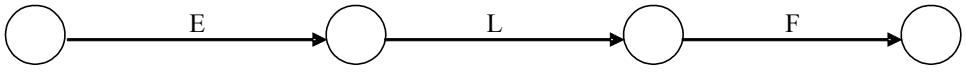
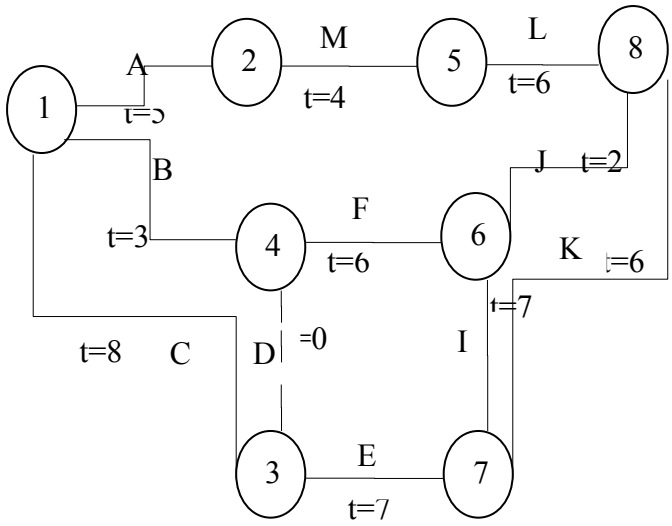


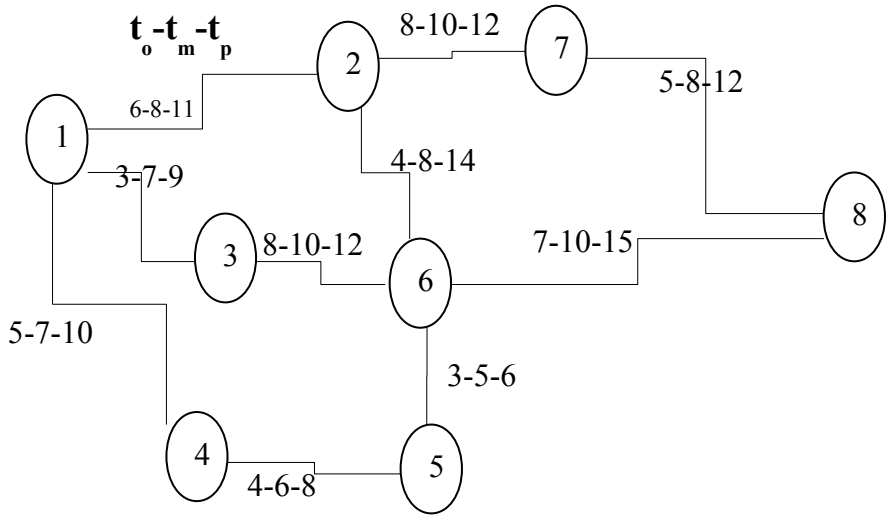
Figure 1

Each of the three operations can be completed in three sections. Draw a network, assuming tha
t the completion of one section in an operation allow beginning of the next operation.

8. a) For the given Network, with the estimated duration of various activities Determine
i) Earliest and Latest Even times
ii) Earliest and Latest Start and Finish times of each activity
iii) Total and Free float
iv) Critical path.



b) The Network of a project is shown below. Determine the Expected time for each of the path. Find out the critical path.



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CODE No.:10BT40201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

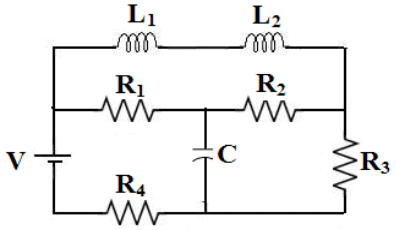
NETWORK ANALYSIS AND SYNTHESIS

[Electrical and Electronics Engineering]

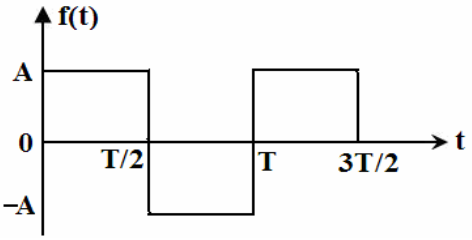
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the terms: Graph, Tree, Co-tree and Incidence matrix with an example.
b) Draw the graph and obtain the Incidence matrix for the circuit shown below.

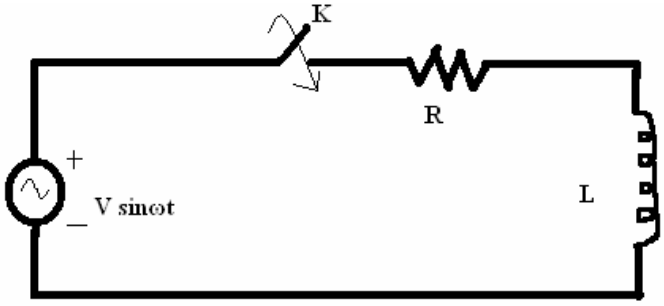


2. a) Find the Fourier series expansion of the following wave form.

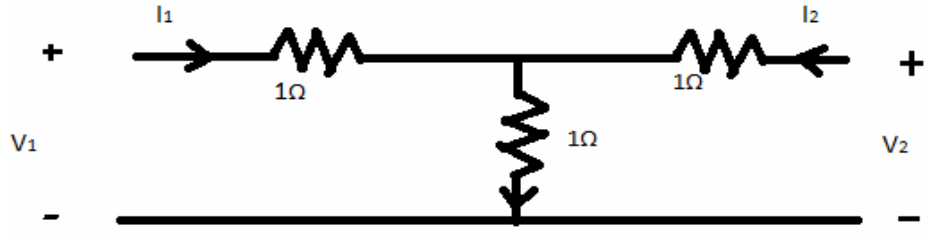


b) Find the RMS value of the voltage wave
v(t) = 15 + 30 Sin(ωt+15) + 45 Sin(3ωt + 30) + 60 Sin(5ωt+45)

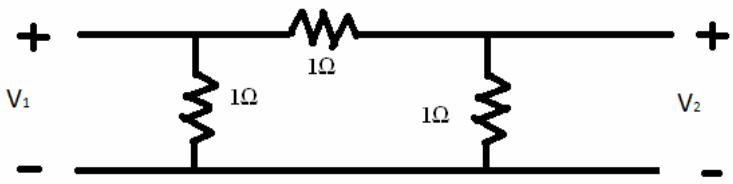
3. a) Explain initial and final value theorems
b) At t=0, a switch is closed, connecting a voltage source V=V sin ωτ to a series RL circuit. By the method of the laplace transformation, show that the current is given by the equation $i = \frac{V}{z}\sin(\omega t - \phi) + \frac{\omega LV}{Z^2} e^{\frac{Rt}{L}}$, where $Z = \sqrt{(R^2 + (\omega L)^2}$ and $\phi = \tan^{-1}\left(\frac{\omega L}{R}\right)$.



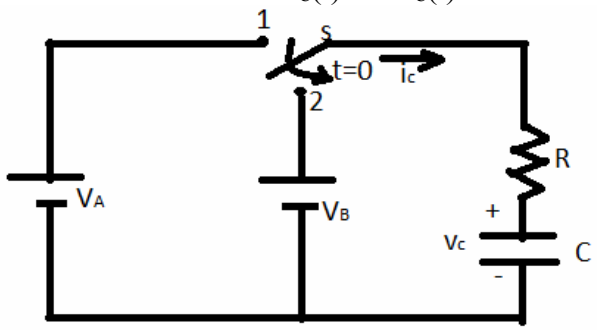
4. a) Find Y parameters for the following network shown below.



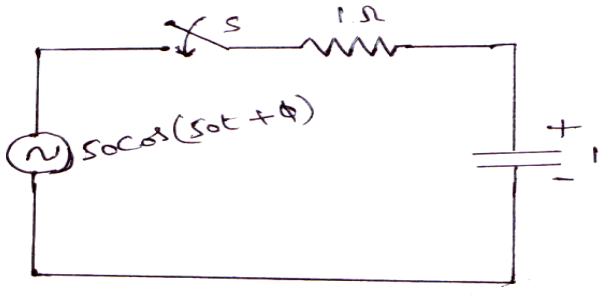
b) Estimate Hybrid (h) parameters for the following network.



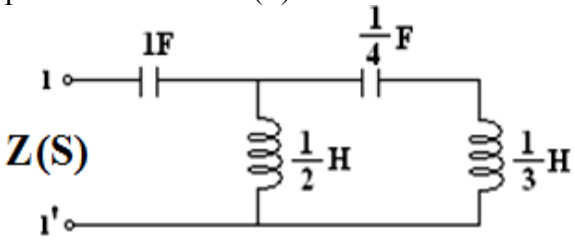
5. a) Describe the response of RL networks to pulse excitation.
b) The switch S in the circuit of fig has been in position 1 for a long time compared to RC. At t=0, it is moved to position 2. Determine $V_C(t)$ and $I_C(t)$ for $t \geq 0$.



6. Determine the current when the switch is closed at a time corresponding to $\phi=0$ in the circuit shown bellow figure. The initial charge on the capacitor is 1 F coulombs with polarity as shown.



7. a) What are the restrictions on location of poles and zeros for Transfer functions?
b) Find the driving point impedance function Z(S) of the LC network shown below.



8. a) State clearly the conditions to be fulfilled for a function to be positive real.
b) Test the following polynomial for Hurwitz property
$2s^6 + s^5 + 13s^4 + 6s^3 + 56s^2 + 25s + 25$.

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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 - 2013

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 change density $\ell_l = 30\mu c/m$. Obtain $\overline{D}$ at (3, 3, 3).

2. a) Derive the expression for potential due to dipole.
b) A point charge Q_1=10 micro coulombs is located at a point P_1(1,2,3) in free space while Q_2=5 micro coulombs is at P_2(1,2,10). Find (i) Force experienced on Q_2 by Q_1. (ii) the coordinates of a point at which a point charge experiences no force.

3. a) A total charge of 50 nC is uniformly distributed over a circular disc lying in xy plane with its centre at origin .Find the potential at point(0,0,6) m.
b) Explain in detail about polarization effects induced in dielectric due to static electric field.

4. a) State and explain Biot-Savarts Law.
b) Find the field intensity at a point on the axis, 6m from the centre of a circular coil of area 125 cm^2 and carrying a current of 45A.

5. a) Explain how Gauss law can be applied to magnetic field.
b) Determine the current density associated with the magnetic field:
$\overline{H} = 4r\overline{a}_r + 5\overline{a}_\theta + Cos\theta\,\overline{a}_\phi \; A/m$

6. Explain the concept of scalar and vector magnetic potential in detail.

7. Derive an expression for force between two straight long parallel current carrying conductors .What will be the nature of force if the current is carrying in the same direction and opposite directions?

8. Write four Maxwell's equations in
i) point form ii) integral form for time varying fields.
Explain the Significance of each equation.

CODE No.:10BT40203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

GENERATION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between conventional and non-conventional energy sources.
b) Explain the advantageous features of grid formation.

2. a) Explain the factors effecting the selection of location of hydro power plant.
b) Explain mass curve of a hydro power plant.

3. a) Explain the function of super heater in a thermal power plant.
b) Why economiser is needed in a thermal power plant?

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

5. a) Explain Ring mains and list its advantages and disadvantages.
b) A three phase ring main PQRS fed at P of 11 kV, supplies balanced loads of 50 A at 0.8 p.f lagging at Q, 120 A at unity p.f at R and 70A at 0.866 lagging at S, the resistances being referred to the various sections are: Section PQ = (1+j0.6) ohm; section QR = (1.2+j0.9) ohm; Section RS = (0.8+j0.5) ohm; Section SP = (3+j2) ohm. Determine the currents in various sections and station bus-bar voltages at Q, R and S.

6. Explain about various (several) ways of classifying substations.

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) Why a consumer having low power factor is charged at higher rates?
b) A consumer has an average demand of 400 KW at a p.f. of 0.8 (lag) and annual load factor of 60%. The tariff is Rs. 100/- per KVA of maximum demand per annum plus 120 paise per KWH. If the p.f. is improved to 0.95 (lag) by installing phase advancing equipment Calculate
i) the capacity of the phase advancing equipment
ii) the annual saving effected
The phase advancing equipment costs Rs. 150 per KVAR and the annual interest and depreciation together amount to 10%.

CODE No.:10BT40204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

ELECTRICAL MEASUREMENTS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the types of constructions used to extend the scale span of PMMC instruments to say about 240° to 300°. Draw neat diagrams to illustrate your answer.
b) A permanent magnet moving coil instrument has a full scale deflection of 90° for a current of 2 A. The deflecting torque in a PMMC ammeter is directly proportional to current in the moving coil. Find the value of current required for a deflection of 30° if the instrument is i) spring controlled ii) gravity controlled

2. Discuss the following types of errors in moving iron instruments
i) Hysteresis error
ii) Temperature error
iii) Error on account of stray magnetic fields and
iv) Error on account of change of frequency

3. a) If the reactance of the pressure coil circuit of a wattmeter is 1 percent of its resistance, calculate the percentage error due to this cause at power factors of 0.8, 0.5 and 0.1 respectively.
b) Explain the working of a 3 phase wattmeter. Draw a neat sketch of the wattmeter and also its connections.

4. a) Explain about the three phase energy meters.
b) Explain about maximum demand meters. Also list out the advantages and disadvantages.

5. Explain with the help of suitable diagrams, how a.c potentiometers can be used for
i) Calibration of voltmeters
ii) Calibration of ammeters
iii) Calibration of wattmeters and energy meters

6. a) Explain about Kelvin's Double bridge for the measuring of low resistance.
b) Explain about Carey foster's bridge.

7. a) Explain about the measurement of Inductance using Maxwell's bridge
b) A Maxwell's bridge is used to measure inductive impedance. The bridge constants at balance are: R1=235kΩ, C1=0.012μF; R2=2.5kΩ; R3=50kΩ. Find the series equivalent of the unknown impedance.

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 bonded 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 - 2013

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) Draw the phasor diagrams of transformer for the following cases.
(i) Resistive load (ii) Inductive load and (iii) Capacitive load
b) A 25 kVA, single phase transformer has 250 turns on the primary and 40 turns on the secondary winding. The primary is connected to 1500 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) Derive an expression for saving in conducting material in an auto transformer over a two winding transformer of equal rating. State advantages and disadvantages of auto transformer over two winding transformer.
b) In a transformer, the core losses is found to be 52 Watts at 40 Hz and 90 Watts at 60 Hz measured at same peak flux density. Compute hysteresis and eddy current losses at 50 HZ.

4. a) What are the various three-phase transformer connections? Explain the Scott connection with neat diagrams.
b) An ideal 3-phase step down transformer connected in star/delta delivers power to a balanced 3-phase load of 100 kVA at 0.8 p.f. The input line voltage is 11kV and the phase to phase turns ratio is 10. Determine the line voltages, line currents, phase voltages and phase currents on both primary and secondary side.

5. a) Describe with neat sketches the constructional details of three phase wound type induction motors.
b) Explain the principle of operation of 3φ induction motors. What are the operational similarities between transformers and induction motors?

6. a) Explain cogging and crawling in squirrel cage induction motor.
b) Explain the principle of induction generator.

7. a) Explain the tests performed to determine the circuit parameters of equivalent circuit of three phase induction motors.
b) Explain air-gap power, internal mechanical power developed and shaft power. Deduce a relationship between them.

8. How will you control a speed of an induction motor? Explain in detail.

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CODE No.:10BT40221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

PRINCIPLES OF ELECTRICAL ENGINEERING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Obtain the expressions of 'Z' parameters & Explain its condition for symmetry and reciprocity.
b) Obtain the expressions of 'ABCD' parameters in terms of Impedance and Admittance parameters.

2. a) What is filter and explain the classifications of Filters?
b) Design constant - K Band pass filter.

3. a) Discuss in detail about lattice attenuator.
b) Design a symmetrical π-attenuator to provide attenuation of 40dB and to work in to a line of 600Ω characteristic impedance.

4. a) Derive the e.m.f. equation of a d.c. generator.
b) With neat sketches explain the armature voltage control method of D.C. shunt motor.

5. a) What are the advantages of a poly phase system over a single phase system?
b) Balanced delta connected load of $5.0\angle 30^0$ Ω and a balanced star connected load of $5.0\angle 45^0$ Ω are supplied by the same balanced 240 V, 3 phase ABC system. Obtain line currents I_A, I_B and I_C.

6. a) Define the efficiency of transformer and also derive the condition for maximum efficiency.
b) A 230v/115v, 50hz single phase transformer has a core loss of 150w. If the input volt-amperes are 200VA. Find i) No load power factor angle
ii) Active component and
iii) magnetising component

7. a) Explain clearly the principle of operation of an Induction motor.
b) The frequency of stator EMF is 50 Hz for an 8-pole induction motor. If the rotor frequency is 2.5 Hz, calculate the slip and the actual speed of rotor.

8. a) Explain in detail the principle of operation and constructional details of a shaded pole motor.
b) Write a short note on the following:
i) Capacitor motors. ii) Stepper motor. iii) AC tachometer.

CODE No.:10BT40301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular Examinations May - 2013

KINEMATICS OF MACHINERY

[Mechanical Engineering]

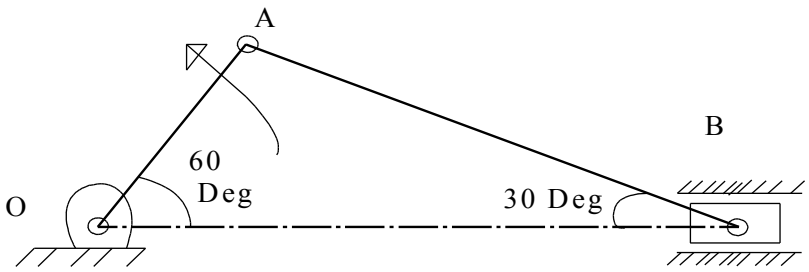
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) How are class I, II, III, IV mechanisms are formed? Define motion and state its types.
b) Describe elliptical trammels. How does it enable you to describe a true ellipse?

2. a) What is Hart mechanism? Explain with neat sketch.
b) Explain Grasshopper mechanism with neat sketch.

3. For the configuration of a slider crank mechanism shown in fig, find
i) The acceleration of slider at B
ii) The angular acceleration of link AB
The crank rotates at 20rad/sec counterclockwise
Given: OA = 480mm; AB=1600mm;AE=450mm



4. a) What are different types of steering gear mechanisms? Describe the working of Ackerman 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. 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 $150^0$of cam rotation with SHM
ii) Follower to dwell for the next 30^0 of cam rotation.
iii) Follower to return to its initial position during 150^0 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) What are the advantages and disadvantages of increasing the center distance of gearing?
b) A pair of spur wheels with 14 and 21 teeth are of involute profile and pressure angle 16°. Find the maximum addenda on the pinion and gear wheel to avoid interference, if pitch in module 6mm. Also, find when the pinion runs at 300 rpm, the maximum velocity of sliding of teeth on either side of pitch maximum velocity of sliding of teeth on either side of the pitch point.

7. a) A Shaft runs at 80 rpm and drives another shaft at 150rpm through belt drive. The Diameter of the driving pulley is 600mm.Determine the diameter of the driven pulley in the following cases:
i) Neglecting belt thickness ii) Taking belt thickness as 5mm
b) Derive the velocity ratio of belt drive.

8. A compound epicyclic train, the input shaft A1 of 1st train is connected to sun wheel S1 having 24 teeth. A planet wheel P1 carried by planet carrier C1 drives and internal gear B1 having 66 teeth. The internal wheel B1 is compounded with a sum wheel S2 which has 28th teeth, while the planet carrier C1 drives a pinion P2 actuated on sun wheel S2 connecting a fixed internal wheel B2 of 62 teeth. The planet carrier C1 or C2 forms the output shaft. Sketch the arrangement. Determine.

a) speed of the output shaft
b) output torque
c) holding torque

If the input shaft runs at 1500 rpm and the input torque is 500 Nm.

CODE No.:10BT40302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular Examinations May - 2013

THERMAL ENGINEERING - I

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the neat sketch of Diesel Cycle and its working principle.
b) Write about Valve Timing diagram for a two - Stroke cycle S.I Engine and Four-stroke cycle C.I engine.

2. a) Differentiate between actual cycle and fuel cycles in IC engines.
b) With neat sketch explain the different losses that occur in actual cycle of IC engines.

3. a) Explain the port timing diagram for a 2-stroke diesel engine with a neat sketch.
b) Explain the working of a simple carburetor with a neat sketch.

4. a) Define the terms stoichiometric air fuel ratio and equivalence ratio. Explain the effect of equivalence ratio on the rate of burning in SI engines with neat sketch.
b) List out various factors that affect the flame speed in SI engines.

5. a) List out the factors that affect the delay period in CI engines.
b) Distinguish the knocking in SI engines and CI engines.

6. a) Describe with a neat sketch the working of vane type compressor and show its P-V diagram.
b) Distinguish between positive and non-positive displacement type compressors.

7. a) Differentiate between isentropic efficiency and isothermal efficiency of a compressor. How to increase the isothermal efficiency of a compressor?
b) An air compressor takes in air at 1 bar and 20 °C and compresses it according to law $pv^{1.2} = c$. It is then delivered to a receiver at a constant pressure of 10 bar. Determine the temperature at the end of compressor, work done and heat transferred during compression per kg of air.

8. a) What is a rotary compressor? How are they classified?
b) Air at a temperature of 300 K flows in a centrifugal compressor running at 10000 r.p.m. The data given is as follows:
Isentropic total head efficiency = 0.76
Outer diameter blade tip = 550 mm
Slip factor = 0.82
Calculate: i) The temperature rise of air passing through the compressor
ii) The static pressure ratio.
Assume that the absolute velocities of air at inlet and exit of the compressor are same.

CODE No.:10BT40303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular Examinations May - 2013

MANUFACTURING TECHNOLOGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the pressurized and non pressurized gating ratio in gating system.
b) Briefly explain the types of pattern allowances.

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) Explain the working principle of submerged arc welding operation with a neat sketch
b) Explain the working of oxy-acetylene gas cutting with a neat sketch.

4. a) List and explain the destructive tests applied in welding.
b) What are the essential steps in brazing operation? Explain.

5. a) Explain how the cross sectional area of a given metal can be reduced in rolling operation. What are different rolling stand arrangements?
b) How a metal working process is different from metal cutting process.

6. a) What is hot extrusion? In how many ways it can be performed?
b) What are the main characteristics and principle of forging?

7. a) A 100mm diameter hole is to be punched in a 6mm thick steel plate. The material is cold rolled C40 steel for which the maximum shear strength can be taken as 550 Mpa with normal clearance on the tools, cutting is complete at 40% penetration of the punch. Give suitable diameters for the punch and die and shear angle on the punch in order to bring the work within the capacity of a 200 KN press available in the shop.
b) Determine the die and punch sizes for blanking a circular disc of 20mm diameter from C20 steel whose thickness is 1.5 mm. shear strength of C20 steel is 294 Mpa.

8. a) Write a short note on electron beam machining.
b) Differentiate between chemical and electro chemical machining.

CODE No.:10BT40401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

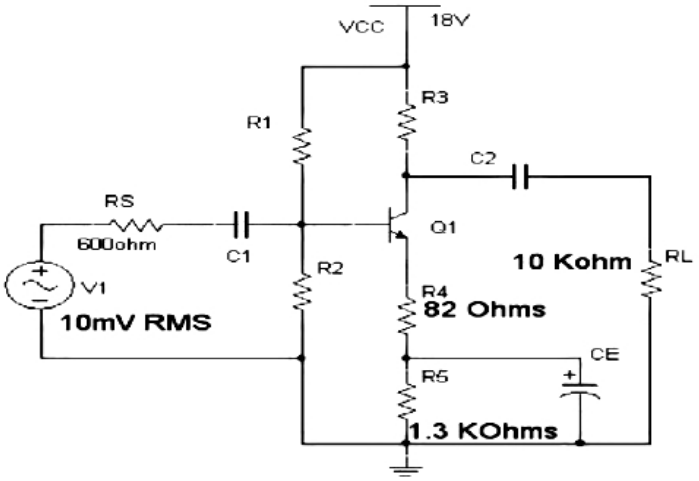
ELECTRONIC CIRCUIT ANALYSIS

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

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

Answer any FIVE questions
All questions carry equal marks

1. For the amplifier circuit shown with partially unbypassed emitter resistance, calculate the voltage gain with R_4 in place and with R_4 shorted. Consider h_{ie} = 1.1KΩ, h_{fe} = 100, h_{re} & h_{oe} are negligibly small. Assume R_1 and R_2 to be 100KΩ and 22 KΩ respectively.



2. 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. a) Derive the expression Hybrid ∏ conductance's g_{ce}, $g_{bb'}$ of a Transistor.
b) Explain how hybrid Π parameters, g_m and g_{ce} vary with I_c, V_{ce} and temperature.

4. a) Differentiate between cascaded and folded cascade configurations.
b) Discuss effects of different type of Loads to common source MOS amplifier.

5. a) Enumerate the effect of negative feedback on various characteristics of the amplifier.
b) An amplifier has an open loop gain of 90. When a negative feedback of feedback factor 0.6 is applied, calculate the overall gain.

6. a) Draw the equivalent circuit of a quartz crystal. What makes the quartz to produce stable oscillations?
b) A wein bridge oscillator has a frequency of 500KHz. If the value of C is 1000pF, determine the value of R.

7. a) Derive the power conversion efficiency of class - A amplifier.
b) Discuss about cross over distortion.

8. a) Discuss the applications of tuned amplifiers.
b) Explain the need for stagger tuned amplifier.

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CODE No.:10BT40402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

PULSE AND DIGITAL CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operation of RC low pass circuit for square wave I/P signal and obtains it's response.
b) Explain RLC circuits and all damping conditions.

2. a) Explain in brief about synchronized clamping.
b) State and prove clamping circuit theorem.

3. a) Explain in brief about silicon-controlled switch circuits.
b) Draw and explain piece wise linear diode characteristics.

4. Calculate the stable state currents and voltages for the self-biased transistor binary, which uses p-n-p germanium transistor has the following parameters:
$V_{CC} = 12V$, $R_C = 4K$, $R_1 = 30K$, $R_2 = 10K$, $R_e = 500\Omega$; Assume for transistor $V_{CE}(sat) \approx -0.1V$, $V_{BE}(sat) \approx -0.3V$. Find the minimum value of h_{FE} which will keep the ON transistor in saturation.

5. a) With the help of a neat circuit diagram and waveforms explain the working of a transistor current time base generator.
b) Define the terms slope error, displacement error and transmission error.

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) Explain the frequency division of an astable multivibrator with pulse signals and with the help of a circuit diagram.
b) Explain how synchronization of a sweep circuit is achieved with the symmetrical signals.

8. a) Draw and explain the circuit of Two-Input TTL NAND gate.
b) With the help of circuit diagram and truth table, explain the working of an RTL NOR gate.

CODE No.:10BT40403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

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) Prove that electric field at any point due to infinite uniform plane charge density $\frac{\rho_s C}{m^2}$ is $\frac{\rho_s}{2\epsilon_0}$.
b) Discuss the applications of Gauss law.

2. a) Define capacitance from the concept of electric field.
b) Derive an expression for capacitance per unit length between two infinitely long concentric conducting cylinders.

3. a) Determine the field strength '**H**" at a point on the axis of an infinite solenoid of radius '**R**' and '**n**' turns/ meter.
b) Find the energy stored in the field in establishing a current of 'I' amps in a solenoid of 'n' turns.

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) Discuss about the propagation of plane waves in free space and in a homogeneous material.
b) Describe about the propagation of plane waves in lossy dielectrics.

6. a) Describe about linear and circular polarization.
b) Describe about reflection of plane waves by a perfect dielectric.

7. a) Explain the conditions which are used for minimum attenuation in transmission lines.
b) For a cable it is decided to provide lumped loading. The primary constants of the cable are R=40 ohm/km , L=1mH/km ,G=1μmho/km, C=0.05μF/km. Find the new value of the inductance required to achieve distortion less condition .By what factor inductance is required to be raised.

8. Explain about the following:
a) Line impedances at high frequencies
b) Infinite lines and characteristic impendence
c) Applications of Transmission lines
d) Effect of loading on secondary constants.

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CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

SWITCHING THEORY & LOGIC DESIGN

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the rules for excess-3 addition? Add the two decimal numbers 125 and 568 in excess-3 code.
b) Perform subtraction with the following unsigned decimal numbers by taking 10's complement of the subtrahend. Verify the result.
i) 20-100 ii) 1500- 1200
c) Write brief Notes on any error correcting code.

2. a) What are most common postulates used to formulate various algebraic structures?
b) State and prove De Morgan's laws. Mention gate equivalents.
c) Simplify the following Boolean functions to minimum number of literals.
i) XY+X'Y ii) XY+X'Z+YZ
d) Draw the logic diagram for expression without simplifying.
(AB+A'B)(CD'+C'D)

3. Simplify the following Boolean expressions using K-map and implement them using NOR gates:
a) F (A, B, C, D) = AB'C' + AC + A'CD'
b) F (W, X, Y, Z) = W'X'Y'Z' + WXY'Z' + W'X'YZ + WXYZ.
c) What are the advantages and disadvantages of Tabular method vis-a- vis the K-Map?

4. a) Draw the logic diagram of 4-bit adder subtractor and explain it's operation.
b) Realize the following Boolean expression using a 8X1 multiplexer.
F = A'B'C+A'BC'+AB'C+ABC

5. Implement the following function using PLA
A(x,y,z)=∑m(1,2,4,6)
B(x,y,z)=∑m(0,1,6,7)
C(x,y,z)=∑m(2,6)

6. a) Explain how a race-around problem is eliminated in JK flip-flop.
b) Draw the logic diagram of a 4-bit ripple counter using flip-flops that trigger on the negative-edge of the clock.

7. a) Write the differences between Mealy and Moore type machines.
b) Define: successor, terminal state, compatibility.
c) What do you mean by distinguishing sequences?

8. a) What is the difference between flow chart and ASM chart?
b) Draw an ASM chart for a 2-bit binary counter having one enable line E such that:
E=1(counting enabled) E=0(counting disabled).

CODE No.:10BT40421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the analysis of a single stage CE amplifier using hybrid model.
b) For a common collector amplifier, the transistor parameters are h_{ic} = 1.2K Ω, h_{fc} = -101, h_{rc} = 1, h_{oc} = 25μA/V. calculate R_i, A_I, A_V, R_o, A_{IS} and A_{VS}.

2. a) Derive the expression for the CE - short circuit current gain as a function of frequency.
b) Given the following transistor measurements mode at I_C = 5mA, V_{CE} = 10 V, and at room temperature h_{fe} = 100, h_{ie} = 0.6kΩ, A_I = 10, C_e = 3pf. Find the following parameters: f_β, f_τ, r_b, e and r_{bb}.

3. a) What is the effect of voltage series negative feedback in the performance measures of BJT amplifiers?
b) Explain the concept of feedback. Derive the expression for the gain of the amplifier with feedback.

4. a) Give the generalized analysis of LC oscillations and list out important outcomes of the analysis.
b) Discuss about crystal oscillator with suitable sketches.

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) The pulse from a high voltage generator (a magnetron) rises linearly for 0.05μs and then remains constant for 1 μs. the rate of rise of the pulse is measured with an RC differentiating circuit whose time constant is 250ps. If the positive output voltage from the differentiator has a maximum value of 50V, what is the peak voltage of the generator.
b) Justify that the initial rates of change in input and output are identical when an exponential wave form is transmitted through an RC high pass filter.

7. a) Explain how transistor acts as switch? Draw base and collector waveforms and indicate all the time intervals.
b) Design the Transistor switch [Inverter] for the following specifications.
Vin= ±3V square wave, VCC=10V,I_C =1mA, hFE=50.Assume Si transistor.

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 - 2013

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) Explain the Von-neumann Architecture.
b) Draw the flow chart for Booth's Multiplication. Show the steps for (+15) X(+13) using Booth's Multiplication Process.

2. Explain any five addressing modes of CPU with examples.

3. a) Write short note on nano programming.
b) With neat diagram explain the design of control unit.

4. a) Discuss in detail about Vector processing.
b) Write about data hazards and instruction hazards.

5. a) What are the various types of ROM? Explain briefly.
b) Write short notes on the following
i) I/O versus Memory bus
ii) Isolated I/O versus Memory mapped I/O
iii) Hand Shaking

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

7. a) List and explain the characteristics of Multiprocessors.
b) Explain the Serial Inter-processor Arbitration with a neat sketch.

8. Write about Pentium-IV architecture in detail.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

OBJECT ORIENTED PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the advantages of an object - oriented programming paradigm?
b) Explain the about various types of inheritance used in OOP.

2. Write about the following:
a) Operator overloading.
b) Abstract class
c) Virtual Function.

3. a) Explain about the access specifiers: public, private and protected.
b) Explain the getChar() and append() methods of StringBuffer class.

4. a) What is static member? Explain with an example. Explain creating and accessing class members using object with an example.
b) What is inheritance? Explain any one type of inheritance with an example program.

5. a) What are the uses of terminate () and Unexpected functions? Explain with a program. How to use multiple catch functions inside a program? Explain with a program.
b) Write all blocks of exception handling. Explain with a program.

6. a) Differentiate multi-threading and Multi-tasking and explain life cycle methods of Thread.
b) What is use of synchronization in JAVA explain with example.

7. a) What is an event? Discuss about WindowEvent and MouseEvent.
b) Explain the different AWT components.

8. a) Write short notes on
i) JFrame
ii) JClass
b) Using java swing, create any front end for hotel registration.

CODE No.:10BT40503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

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 major influences on language design?
b) Define dynamic semantics. Explain briefly different approaches for describing dynamic semantics.

2. a) Write on decimal data types. What are the advantages and disadvantages of decimal data type?
b) What are the design issues for names? Explain in detail.

3. a) Define operator precedence and operator associativity.
b) What is short-circuit evaluation?
c) Name a language that always does short-circuit evaluation of Boolean expressions. Name one that never does it. Name one in which the programmer is allowed to choose.

4. a) Explain the concept of nested procedures.
b) Discuss the concepts of overloaded sub programs.

5. a) What are the language design issues for abstract data types?
b) How are instances of C++ template classes created?
c) What is missing in the SIMULA 67 support for abstract data type?

6. a) How can an exception be explicitly raised in Ada?
b) What is the difference between a C++ throw specification and a Java throws clause?

7. a) Enumerate the differences between functional and imperative languages.
b) Explain Structures and arrays in Machine Learning. Give examples.

8. a) Explain the concept of data abstraction.
b) Discuss the important features of Python.

CODE No.:10BT41001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

ELECTRICAL & 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) Name the factors that governs the choice of a suitable method of measuring resistance and explain why the accuracy obtainable with the potentiometer method of measuring low resistance is high.
b) Two mains are working at a pd of 220V. A voltmeter of 10 k Ω/ volt resistance with a maximum scale of 250V when connected between + ve main and earth reads 149V but when connected between - ve main and earth reading is only 42 volts. Calculate the insulation resistance to earth of each main.

3. a) What is a watt meter? Briefly discuss the torque equation of single phase watt meter.
b) Briefly discuss about the testing methods adopted for single phase energy meters.

4. a) Name the factors that govern the choice of a suitable method of measuring resistance and explain what you mean by low, medium and high resistances. Describe any method to measure a low resistance with accuracy.
b) In a 440 volt d.c supply line when the positive main was earthed through a milliammeter in series with a 25kΩ resistance, current flowing through the meter was 1 milliampere. When the negative main was earthed in the similar way, the current flowing was half milliampere. Determine the resistance between the two mains and earth.

5. a) Write a short note on rectifier type AC voltmeter.
b) Discuss about staircase ramp type Digital Voltmeter.

6. a) Explain Output Power Meter with a neat circuit diagram.
b) Explain various types of errors associated with Frequency Counter.

7. a) With a neat sketch, explain the working principle of Cathode Ray Tube (CRT).
b) Draw the block diagram of a digital storage oscilloscope and explain the function of each block.

8. a) Write a short note on spectrum analyzers.
b) With a neat sketch, explain in detail about LED and LCD display systems.

CODE No.:10BT41002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

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) What are the basic blocks of a generalized Instrumentation System? Draw the various blocks and explain their functions.
b) Explain briefly about (i) International Standards (ii) Primary Standards (iii) Secondary Standards (iv) Working Standards.

2. a) Define the following:
i) Sensitivity ii) Linearity iii) Hysteresis iv) Calibration
b) Explain the second order measurement system and its response to step input

3. a) Explain the different types of potentiometers.
b) Describe the construction and working of LDR.

4. a) What is LVDT? Explain its construction, principle and applications.
b) Explain the construction, working and applications of Resolvers.

5. a) Explain the different principles and working of capacitive transducers.
b) Explain how capacitive transducer can be used for measurement of displacement.

6. a) Explain the photo-voltaic transducers in detail.
b) Draw the various kinds of thermocouple junctions and their sheaths and discuss the seeback effect in thermocouple.

7. a) Explain the working principle of Wheat-stone Bridge in deflection mode.
b) Discuss in detail about the chopper amplifiers.

8. a) Write short notes on MEMS.
b) Explain absolute encoder using 3-bit BCD code.

CODE No.:10BT41201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

DATA COMMUNICATIONS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List and briefly explain the four transmission modes.
b) Describe serial and parallel data transmission and explain the advantages and disadvantages of both types of transmissions.
c) Define electrical noise and describe different forms of electrical noise.

2. a) Describe a transverse electromagnetic wave.
b) Comparison between optical fibre cables to metallic transmission lines.

3. a) Define Companding and describe digital companding.
b) Determine the 12-bit linear code, the eight bit compressed code, the decoded 12-bit code , the quantization error and the compression error for a resolution of 0.01v and analog sample voltage of +10.234v
c) Describe wavelength division multiplexing.

4. a) Describe the difference between wave attenuation and wave absorption.
b) Explain the concept of free path loss and skip distance.

5. a) Explain the function and basis operation of telephone components.
b) What is the purpose of an echo suppressor and echo canceller?

6. a) Describe the advantages and disadvantages of cellular telephone compared to analog cellular telephone.
b) Define the following terms i) Hand off ii) frequency reuse
iii) Adjacent channel interference iv) Rooming.

7. a) List and describe the various error detection and error correction methods.
b) What is the hamming distance for the following codes and also give explanation in support to the answer:
i) d(10000, 01000)
ii) d(0000, 0000)
iii) d(10000, 01100)
iv) d(11001, 11111)

8. a) List and describe the basic blocks of a voice-band modem.
b) Describe the purpose of scrambler and descrambler circuits.
c) Explain the difference between the terms probability of error and bit error rate.

CODE No.:10BT41221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

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 about raster scan system.
b) Discuss about the construction and functioning of different graphical input devices.

2. Elaborately discuss the midpoint ellipse drawing procedure and solve the following: Find the points on the ellipse in the first quadrant with major axis =6 units and minor axis =4 units.

3. a) Derive the transformation matrix for y-direction shearing relative to the line x = a. Hence give the transformation matrix for shearing parameter value of ½ and a = -1.
b) Derive the 3 D transformation matrix for rotation about an
(i) arbitrary axis
(ii) an arbitrary plane.

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 for B-Spline surface.
b) Explain #D Composite Transformations.

6. a) Briefly explain about evolving technologies for multimedia.
b) Explain the applications of multimedia with suitable examples.

7. a) Explain different techniques used for image compression.
b) How to prepare a digital audio file?

8. a) Write note on any two popular metaphors for user interface design with examples for each of them.
b) What are the components of a Hypermedia message? Explain.

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

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 open loop and closed loop control systems with an example.
b) Discuss the mathematical modeling of fundamental components of mechanical translational system.

2. a) Obtain the transfer function armature voltage control of a DC shunt motor.
b) Determine the signal flow graph for the following system $\frac{G(s)}{R(s)} = \frac{2.5(s+3)}{(s+10)^2(s+4)}$.

3. a) 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. Consider the open-loop transfer function of a unity feedback control system

$$G(S) = \frac{K(S+2)}{S(S+4)(S+6)}$$

Using Routh criterion, find the range of values of K that corresponds to a stable system. Note that K is a positive real constant.

5. a) Explain the frequency domain specifications of a typical system.
b) Explain the general procedure for constructing Bode plots.

6. Sketch the Nyquist plot for a system with the open-loop transfer function

$$G(S)H(S) = \frac{K(1+0.5S)(S+1)}{(1+10S)(S-1)}$$

Determine the range of values of K for which the system is stable.

7. a) Draw the circuit diagram of a lag compensator and obtain its transfer function.
b) Describe the advantages and limitations of lead compensator.

8. Given the transfer function:

$$G(s) = \frac{2}{(s+12)^2} + \frac{4}{(s+20)} + \frac{3}{s+1}.$$

Write the state transition matrix.

CODE No.:10BT42301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

MASS TRANSFER AND SEPARATION

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. The air pressure in a tyre reduces from 2 bars to 1.99 bars in five days. The volume of air in the tube is 0.25 m^3, the surface area is 0.5 m^2 and wall thickness is 0.01 m. the solubility of air in rubber is 0.07 m^3/m^3 rubber. Estimate the diffusivity of air in rubber.

2. Prove (or) show the following relationships with the equation.
a) Convert K'C to KY and KG
b) Convert KL to KX and K'X.
c) Convert KG to KY and KC.

3. Describe the operations - flash vaporization, differential distillation and steam distillation.

4. A mixture of 40 mole% Benzene with Toulene is distilled in a column to give a product of 95 mole% Benzene and a waste of 5 mole% Benzene using a reflux ratio of 4. By using the McCabe and Thieles method determine
a) The number of plates required and the position of the feed if supplied to the column as liquid at the boiling point.
b) Minimum reflux ratio possible.
c) Minimum number of plates.

5. Explain the terms constant and variable under flow conditions.

6. a) Explain the theory of batch drying with the help of schematic diagrams.
b) Discuss the construction of tray dryer with the help of a schematic diagram.

7. Explain the processes - dialysis, reverse osmosis and ultra filtration.

8. Describe about case study crystallization of citric acid.

CODE No.:10BT42302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

ANALYTICAL TECHNIQUES IN BIOTECHNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the Principles of electrophoresis. How proteins are separated in SDS-PAGE.

2. Explain the principle of ultracentrifugation and how ultracentrifugation is used in the determination of molecular weight of a protein?

3. Explain the principle, instrumentation and applications of UV visible spectrophotometer.

4. Write in detail principles and applications of circular dichroism and X-ray diffraction.

5. Explain the principles and applications of electrophoresis.

6. Explain the methods of aminoacid sequencing and explain how HPLC aids in this method?

7. Explain the principles and applications of fluorescent and confocal microscopy.

8. Give an account on principle instrumentation and applications of biosensors in brief.

CODE No.:10BT42303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

MOLECULAR BIOLOGY AND GENETICS

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Write in detail about the DNA replication in Eukaryotes.

2. Write Short notes on
   a) Transcriptional inhibition.
   b) RNA polymerases.

3. Explain:
   a) tRNA.
   b) RNA splicing.

4. Describe the mechanism of translation in prokaryotes.

5. Write about various types of gene interactions.

6. Give an account on Chromatin, Telomere and Centrosome.

7. Describe in detail about Non-disjunction as a proof of chromosomal theory of inheritance.

8. Write the molecular mechanism of transformation.

CODE No.:10BT42304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

BIOCHEMICAL THERMODYNAMICS

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is enthalpy? Is enthalpy a state function? Explain.
b) Liquid water at 453.15 K (180^{o}C) and 1002. 7 Kpa has an internal energy of 762.0 KJ Kg^{-1} and a specific volume of 1.128 cm^3g^{-1}.
i) What is enthalpy?
ii) The water is brought to the vapour state at 573.15K (300^{o}C) and 1500 Kpa, where its internal energy is 2784.4 KJ Kg^{-1} and its specific volume is 169.7 cm^3g^{-1}. Calculate ΔU and ΔH for the process.

2. a) What is second law of thermodynamics and derive the relevant equations.
b) Differentiate between state and path functions with examples.

3. a) Explain briefly estimation procedures for equation of state parameters.
b) Give a note on phase rule.

4. Reported values for the virial coefficients of isoproponol vapour at 200^{0}C are:

$$B = -0.388\ m^3/kmol, \quad C = -26 \times 10^{-3}\ m^6/kmol^2$$

Calculate V and Z for isoproponol vapour at 200^{0}C and 10 bar by
a) Ideal gas equation
b) Using the equation Z=PV/RT=1+BP/RT

5. a) How is partial molar property defined and what is its significance.
b) What is Gibbs Duhem equation and what is its utility?

6. What is LLE? Describe about LLE with neat diagram.

7. How is equilibrium constant of a chemical reaction defined? How does it depend on temperature and pressure?

8. a) Adenosine phosphates are energy shuttles in living systems. Explain.
b) What is a yield factor? What is its significance?

CODE No.:10BT42305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

BIOPROCESS ENGINEERING

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Discuss about integrated bioprocess involving upstream and downstream unit operations in bioprocess.

2. a) State the law of conservation of mass and write the general mass balance equation.
b) What are the various steps involved in material balance calculations? Discuss them briefly.

3. Write short notes on
a) General energy balance equation.
b) Energy balance equation for unsteady state.

4. What is meant by solid state fermentation? Explain the industrial application of solid state fermentation indicating the microorganisms, substrates and products.

5. Give a detailed account of the medium requirements for fermentation processes.

6. Determine the yield coefficients ($\mathbf{Y_{X/S}}$ **&** $\mathbf{Y_{X/O_2}}$) and total amount of oxygen required in a batch reactor of 10000 liters volume with the growth of yeast on glucose as per the equation given.
$C_6H_{12}O_6 + 3O_2 + 0.48NH_3 \rightarrow 0.48C_6H_{10}NO_3 + 4.32H_2O + 3.12CO_2$
Final yeast concentration of 47gdw/lit is required.

7. Discuss in detail oxygen consumption and heat evolution in aerobic cultures.

8. Discuss the different phases of cell growth in batch cultures.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

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 the difference between pseudo-code and algorithm?
b) Explain how to calculate Time Complexity for an algorithm with example.

2. a) Write Greedy algorithm to generate shortest path.
b) If p1/w1 p2/w2..... pn/wn prove that knapsack generates an optimal solution to the given instance of the knapsack problem.

3. a) Write the recursive binary search algorithm. Also find its time complexity.
b) Write and analyze the algorithm to find maxima and minima.

4. Using the greedy approach of algorithms, write notes on the following:
a) 0/1 knapsack problem
b) Single source shortest path problem.

5. a) Explain Traveling Sales Person problem with example.
b) Differentiate between Dynamic Knapsack and Branch-and-Bound Knapsack problem.

6. a) Explain the properties of strongly connected components.
b) Describe algorithm for Biconnected components and analyze its time complexity.

7. Describe detail about LC Branch and Bound solution.

8. Trace out one main difference between divide and conquer strategy and dynamic programming. List out two sorting algorithms which follow divide and conquer strategy.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

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 8086 ALP to add two 16-bit packed BCD numbers.
b) Write an 8086 ALP to move a string of data words from offset 3000H to offset 4000H. The length of the string is 0CH.

3. a) Explain with a neat diagram interfacing of 8257 with 8086.
b) Explain how static RAMs are interfaced to 8086. Give necessary interface diagram assuming appropriate signals and memory size.

4. a) Draw the interfacing scheme of 8255 and 8086 in memory mapped I/O mode.
b) Explain how eight seven-segment display devices and hex keyboard can be interfaced to a microprocessor.

5. a) Explain the interrupt programming in 8086.
b) Briefly explain the interfacing of 8259A with 8086.

6. a) Explain the RS-232C to TTL interfacing and give overview of RS-232C serial data standard.
b) What is Memory mapped I/O? Draw the interfacing of 8251 with 8086 in memory mapped I/O mode.

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

8. a) Discuss briefly about external data memory of 8051.
b) Briefly explain about Input/Output ports of 8051.

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2013

OPERATING SYSTEMS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail any two OS structures.
b) Describe about the generations of OS.

2. a) Discuss Threading issues pertaining to multi threaded programs.
b) Compare and contrast process management in UNIX and Windows process.

3. a) What is race condition? Explain about critical section problem.
b) Explain role of semaphores for process synchronization.

4. a) What is resource allocation graph? How resource allocation graph can be used in the context of deadlocks.
b) How deadlocks can be prevented considering the four necessary conditions?

5. a) Write the similarities of paging and framing? Explain the structure of a page table.
b) Write short notes on thrashing.

6. a) Explain the two - level directory and three level structured directory.
b) Give short notes on UNIX file system and Windows file system.

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

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) Regular/Supplementary Examinations May - 2013

THEORY OF COMPUTATION

[Information Technology]

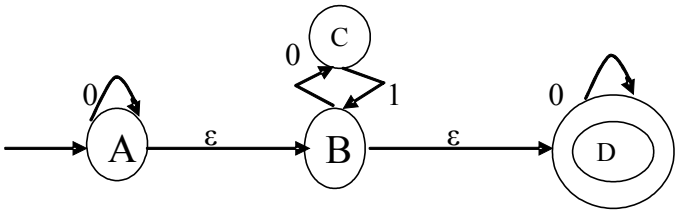
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Explain the following with suitable example.
a) Power of an alphabet b) String Concatenation c) Language.
d) Finite Automata for banking process.

2. a) Explain the regular and non-regular languages with examples.
b) If L is a RL, then the language L^n is regular for every n>=0. Is the above statement correct? If so prove it.

3. a) Convert the following NFA with-**ε** into NFA without-ε.



b) Explain the minimizing the FA with examples.

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. Define and explain pumping lemma for Context Free Language (CFL).

6. a) Define PCP with an example.
b) Explain about modified PCP.

7. Explain the following terms in brief:
a) Computable function.
b) P and NP problem.
c) UTM.

8. a) What are the properties of LR(K) grammars show that the grammar.
i) S→0A2 ii) S→aAb
A→1A1 A→aAb/a is LR(1)
A→1 is not LR(0)
b) Explain PCP with three examples and Prove that the PCP over ∑ for | ∑ | >=2 is unsolvable.

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

PROBABILITY AND STATISTICS

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Box I contains 1 white and 999 red balls. Box II contains 1 red and 999 white balls. A ball is drawn at random and found it to be a red ball. What is the probability that it came from Box I.

b) If the density function of a continuous random variable X is given by

$$f(x) = ax, \quad 0 \le x \le 1$$
$$= a, \quad 1 \le x \le 2$$
$$= 3a - ax, \quad 2 \le x \le 3$$
$$= 0, \quad elsewhere$$

i) Find the value of a ii) Find the cdf of X

iii) If x_1, x_2 and x_3 are 3 independent observations of X, what is the probability that exactly one of these 3 is greater than 1.5?

2. a) Explain Poisson distribution. Give its applications.

b) The marks obtained in statistics in a certain examination found to be normally distributed. If 15% of the student's ≥≥ 60 marks, 40% << 30 marks, find the mean and standard deviation.

3. a) Ten competitors in a beauty contest were ranked by three judges as follows.

	Competitors									
Judges	1	2	3	4	5	6	7	8	9	10
A	6	5	3	10	2	4	9	7	8	1
B	5	8	4	7	10	2	1	6	9	3
C	4	9	8	1	2	3	10	5	7	6

Discuss which pair of judges have the nearest approach to common taste of beauty.

b) Find the equations of the regression lines from the following data. Also estimate the value of Y when X = 30

X:	25	28	35	32	31	36	29	38	34	32
Y:	43	46	49	41	36	32	31	30	33	39

4. a) What is level of significance, and why is it useful? Explain Type-I and Type-II errors.

b) What is the effect on standard error, if a sample is taken from an infinite population of sample size is increased from 400 to 900.

5. a) In a sample of 600 men from a certain city, 450 men are found to be smokers and in a sample of 900 from another city 450 are found to be smokers. Do the data indicate that the two cities are significantly different with the respect to prevalence of smoking habit among men?

b) Two random samples of sizes 400 and 500 have mean 10.9 and 11.5 respectively. Can the samples be regarded as drawn from the same population with variance 25?

6. a) The nicotine contents in two random samples of tobacco are given below.
Sample I : 21 24 25 26 27
Sample II : 22 27 28 30 31 36
Can you say that the two sample came from the same population

b) The following table gives for a sample of married women, the level of education and the marriage adjustment score.

Level of education/Marriage adjustment	Very low	Low	High	Very High	Total
College	24	97	62	58	241
High school	22	28	30	41	121
Middle school	32	10	11	20	73
Total	78	135	103	119	435

Can you conclude from the above data that the higher level of education, the greater is the degree of adjustment in marriage?

7. Twenty pieces of cloth out of different rolls contained respectively 1, 4, 3, 2, 5, 4, 6, 7, 2, 3, 2, 5, 7, 6, 4, 5, 2, 1, 3 and 8 imperfections. Ascertain whether the process is in a state of statistical control.

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

i) Average queue length
ii) Expected idle time of the cashier
iii) Expected time a new arrival spends in the system
iv) Expected waiting time of a new arrival before his service is started

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

ENVIRONMENTAL SCIENCES

[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) Write note on Abiotic and Biotic components.
b) Explain the role of Environmental Science for the Sustainable development.

2. a) Discuss the forest resources and deforestation effects.
b) What are the adverse effects of dam building constructions?

3. a) Discuss the fertilizers and pesticides effects on agriculture.
b) Explain the need of renewable energy.

4. a) Write an essay on hot spots of biodiversity.
b) Explain the role of biodiversity in addressing new millennium challenges.

5. a) Explain about the Disaster Management.
b) Explain about Nuclear pollution.

6. a) Explain briefly about watershed management.
b) Write a detailed note on acid rains.

7. a) Write an essay on AIDS.
b) Write a detailed note on family welfare programmes.

8. a) What are the contents included in an environmentalist's diary?
b) List out the suggestions you would put forward to the municipal authorities in your town with regard to improper drainage and garbage systems.

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

OPTIMIZATION TECHNIQUES

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the statement of an Optimization problem and discuss the following:
i) Constraint surface ii) Objective function iii) Objective function surfaces.

2. Solve the problem:

Min. $X_1 + X_2$

Subject to:

$X_1^2 + X_2^2 = 1$

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. a) Distinguish between Transportation problem and Assignment problem.
b) At the beginning of a sowing season, there will be surplus of 6, 9, 7, and 5 tractors in four villages, A, B,. C, and D while three other villages, X, Y, and Z will require 8, 7, and 12 tractors, respectively for farming purposes. The cost of moving tractors is directly proportional to the distance between the surplus and deficit villages, and these distances (in kilometers) are given below:

		Deficit villages		
		X	**Y**	**Z**
	A	26	22	28
Surplus	**B**	19	27	16
Villages	**C**	39	21	32
	D	18	24	23

Determine the optimal scheme for delivery of tractors from surplus villages to deficit villages.

5. Find the minimization of the function $f = \lambda^5 - 5\lambda^3 - 20\lambda + 5$ in the interval (0, 5) by the Fibonacci method.

6. Using Powel's method, Minimize $f(x_1,x_2) = x_1 - x_2 + 2x_1^2 + 2x_1x_2 + x_2^2$

With starting point, $x_1 = \begin{pmatrix} 0 \\ 0 \end{pmatrix}$

7. Solve the following using exterior penalty function minimize

$f(x_1,x_2) = \frac{1}{3}(x_1 + 1)^3 + x_2$ subjected to

$g_1(x_1,x_2) = 1 - x_1 \leq 0$

$g_2(x_1,x_2) = -x_2 \leq 0$

8. Explain the computational procedure in dynamic programming.

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November – 2012

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

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

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

Answer any FIVE questions
All questions carry equal marks

1. Explain Nature and scope of Managerial Economics?

2. Explain the internal and external economies of scale.

3. Discuss the various types of markets.

4. Write a note on new economic policy 1991.

5. Draw trial balance of the following items and difference in trail balance can be transferred to suspense a/c.

Debtors	Rs 10,000	Sales	Rs 25,000
Creditors	Rs 12,000	Cash	Rs 5,000
Capital	Rs 50,000	Land	Rs 50,000
Loan	Rs 15,000	Furniture	Rs 15,000
Bills payable	Rs 10,000	Wages	Rs 3,000
Opening stock	Rs 15,000	Salaries	Rs 8,000
Purchases	Rs 12,000	Sales	Rs 2,000

6. From the following Trial Balance, prepare Trading A/c, P & L A/c and Balance Sheet of Ranjith & Company for the year ended 31-03-2012.

Additional Information:-

a) Closing stock as on 31-03-2012 was Rs.57000.
b) Depreciation on Plant & Machinery @ 10%, Fixtures & Fittings @ 5%.
c) Prepaid Insurance Rs.500.
d) Prepaid Salary Rs.600.
e) Outstanding Interest Rs.2500.
f) Provision for Bad debts is to be maintained @5%.

Trial Balance

Particulars	Debit Rs	Credit Rs
Opening stock	45,000	
Capital A/c		90,000
Plant & Machinery	85,000	
Sundry Creditors		40,000
Fixtures & Fittings	7,500	
Discount Received		3,500
Freehold Premises	75,000	
Bank Over Draft		20,000
Purchases	1,50,000	
Sundry Debtors	55,000	
Provisions for bad Debts		3,000
Salaries	14,000	
Purchase returns		1,500
Sales		3,37,070
Manufacturing Expenses	15,000	
Manufacturing Wages	30,000	
Carriage Inwards	2,000	
Carriage Outwards	2,100	
Administrative Expenses	10,000	
Bad debts	750	
Interest and banking charges	625	
Discount allowed	750	
Insurance	1,500	
Cash in Bank	695	
Cash in hand	150	
	4,95,070	4,95,070

7. A company has to select one of the following two projects:

		Project A (Rs.)	Project B (Rs.)
Cost		11,000	10,000
Cash Inflows:			
Year	1	6,000	1,000
	2	2,000	1,000
	3	1,000	2,000
	4	5,000	10,000

Using the Internal Rate of Return Method and suggest which project is preferable.

8. Explain the difference between manual accounting and computerized accounting.

CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

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) What are the different performance measures used to represent a computer systems performance?
b) Explain the subtraction of numbers represented by in floating point notation with example?

2. a) Design a 4-Bit binary Adder|Subtractor and Explain its uses?
b) Write the differences between CISC and RISC?

3. a) Write Differences between hard wired control and micro programmed control?
b) Explain Address Sequencing?

4. a) Explain four-segment instruction pipe line?
b) Explain the three-segment instruction pipe line?

5. a) Explain the different types of mapping techniques of cache memory.
b) Explain asynchronous mode of data transfer in serial communication.

6. a) Explain working principles of USB?
b) Briefly compare the characteristics of SCSI with PCI?

7. a) Explain the functioning of Omega switching network with neat sketch.
b) Explain Inter-processor communication.

8. Write about Pentium -IV architecture

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

CONTROL SYSTEMS

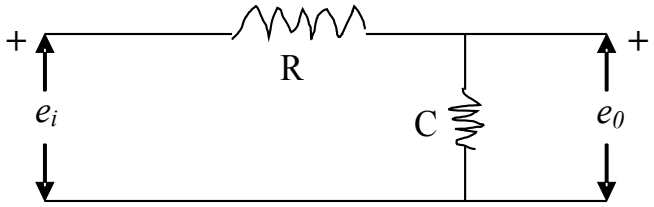
[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the properties of closed loop system.
b) Explain the effect of feedback on the noise and sensitivity of the system.

2. a) Explain the operation of synchronization.
b) Develop the block diagram of the given system.



3. a) What are the time domain specifications?

b) A unity feedback system has the forward path system as $G(s) = \frac{10}{s(s+2)}$, Find the generalized error coefficient for $r(t) = t$.

4. a) Explain Routh-Hurwitz criterion.
b) Determine the stability of the system whose characteristic equation is given by $s^5 + 2s^4 + 3s^3 + 6s^2 + 5s + 3 = 0$.

5. Obtain the bode plot for the transfer function $G(s) = \frac{20}{(s+1)(s+8)(s+12)}$. From the bode plot, obtain phase margin and gain margin.

6. a) Determine the maximum value of k which makes the transfer function $G(s) = \frac{k}{s(s^2+s+4)}$.

b) A unity feedback system with $G_c(s) = K$ has $G(s) = \frac{e^{-0.1s}}{(s+4)}$. Select a gain K so that the phase margin of the system is 40^0. Determine the gain margin for the selected gain K.

7. Consider a type-1 unity feedback system with an open loop transfer function $G(s) = \frac{K}{s(s+1)}$. It is specified that $K_V = 12$ /sec and $\Phi_{PM} = 40^\circ$. Design lead compensator to meet the specifications.

8. a) Define controllability and observability. Give physical examples.

b) Derive the transfer function if the static model is, $\dot{x} = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix} x + \begin{bmatrix} 1 \\ 0 \end{bmatrix} u;\ y = \begin{bmatrix} 1 & 0 \end{bmatrix} x$.

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CODE No.:10BT50101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

STRUCTURAL ANALYSIS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A system of 5 wheel loads 80 kN, 140 kN, 160 kN, 50 kN and 40 kN crosses a beam of 15m span with the 80 kN load leading. The distances between the loads are 2.4m, 3m, 2.4m and 1.6m respectively. Find the absolute maximum B.M.

2. a) Sketch the influence line for the BM, SF at mid span of a double overhanging beam of span between the supports "L" and each overhang is "a". Using these diagrams find the BM at mid span when a UDL of intensity "w" is applied on the entire length of the beam.

b) Sketch the influence line diagram for the axial force in the top chord and bottom chords of 3rd panel of an N-type simply supported truss. Truss has 5 bays of each 6m length and height 8m.

3. Analyse the continuous beam shown in fig.1 by moment distribution method, if support B yields by 10mm. Take EI = $1x10^{12}$N-mm^2 throughout. Draw the B.M diagram.

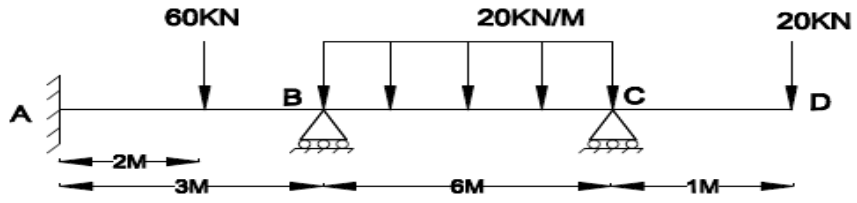

FIG.1

4. Analyse the continuous beam shown in Fig.2, using Slope-Deflection method, and draw shear force and bending moment diagrams. Locate and find the distances of the points of contra-flexure from supports. Draw elastic curve.

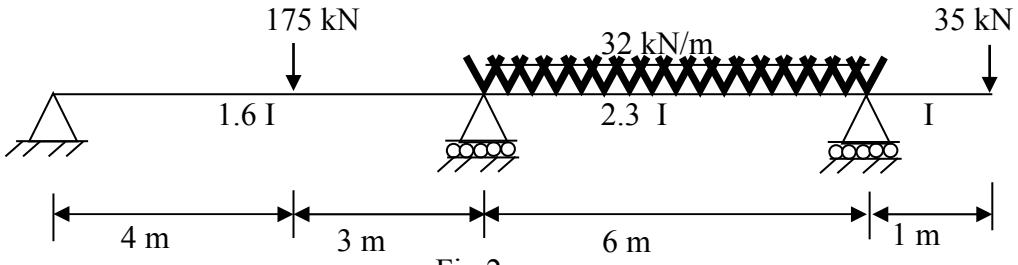

Fig.2

5. Analyse the continuous beam ABCD shown in fig.3 by Kani's method. The support C sinks by 5mm. Take E = $2x10^5 N/mm^2$ and I = $3x10^7$ mm^4.

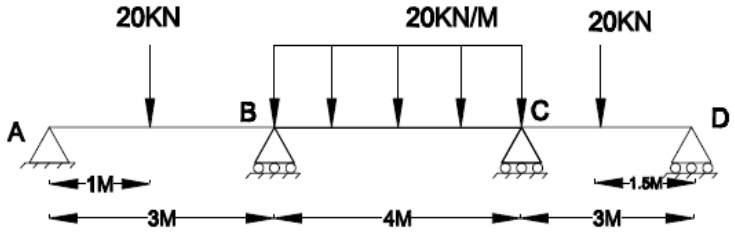

FIG.3

6. Determine the horizontal deflection of the roller support C of the frame shown in fig.4 due to applied load of 80 kN at B. Members AB, BC and BD are each of 800 mm^2area and AD and CD are each of 1600 mm^2 area. E = $2.06x10^5$ N/mm^2.

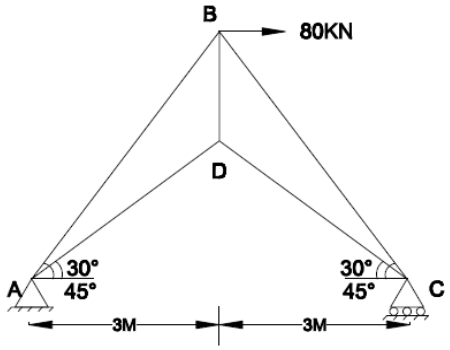

FIG.4

7. The frame work shown in fig.5 is made from bars all having the same extensibility AE. It is supported at B and C and carries loads at A and D. Determine the load in the bar CE.

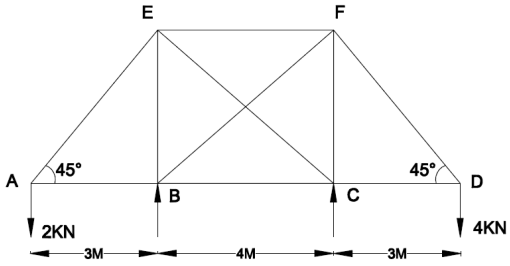

FIG.5

8. Analyze the portal frame shown in Fig.6 and draw BMD for the same. Adopt Cantilever method. Each Horizontal load is 50kN. Height of each column is 3m.

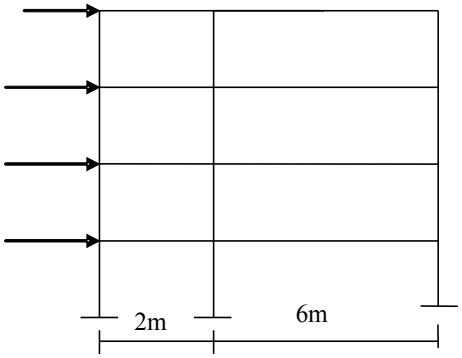

Fig.5

Fig.6

CODE No.:10BT50102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

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 staircase in a public building to be located in a staircase room 6 m long and 3 m wide.
Height between floors = 3.6 m
Live load = 4 kN/m^2
The stairs are supported on beams over walls and sides of steps are built into the wall by 120 mm. Adopt M 20 grade concrete and Fe 415 grade steel.

2. Design a RCC raft foundation connecting the columns of a building. The columns are arranged in a square grid 9 m × 9 m and spaced at 3 m apart. The safe bearing capacity of the soil is 125 kN/m^2. The total service load acting on the columns is 4200 KN. The cross-section of each column is 350 mm × 350 mm. Adopt M25 Concrete and Fe 415 steel. Draw the reinforcement details.

3. A pile cap connecting 4 R.C piles of 300mm × 300mm is to be designed to support a reinforced concrete column 400mm x 400mm carrying a service load of 2000 kN. The piles are located parallel to the column faces with their centres located 800mm from the centre of the column. Using M20 grade concrete and Fe 415 grade steel, design the pile cap and sketch the details of reinforcements.

4. 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 35^0. 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 M 20 grade of concrete and Fe 415 steel.

5. Design the roof dome and top ring beam of an overhead water tank of capacity 8 lakh litres. Use M20 grade concrete and Fe 415 grade steel. Sketch the details of the reinforcement.

6. Design a RCC circular tank resting on the ground with flexible base to store 250 × 10^3 litres of water. The depth of the tank is limited to 4 m. Use M 20 grade of concrete and Fe 415 steel.

7. A curved beam is in the form of a continuous circle in plan with a radius of 4m is supported on 6 columns 250mm x 250mm. The beam carries a udl of 40 kN/m length, inclusive of its own weight. Design the beam using M20 grade concrete and Fe 415 grade steel. Sketch the details of reinforcement.

8. a) 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) Regular Examinations November - 2012

ENGINEERING HYDROLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What do you understand by precipitation? Explain various types of precipitation.
b) Write a brief note on mechanism of precipitation.

2. a) List out different types of self recording rain ranges. Explain the working of any one of them with the help of neat sketch.
b) What is a rainfall hyetograph? How is it derived from a given rainfall mass curve?

3. a) Explain the factors affecting infiltration. State any two practical applications of the concept of infiltration.
b) Discuss different methods of estimating evapotranspiration. What is the practical application of estimation of evapotranspiration?

4. a) 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? 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) 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) The annual flood peak of a stream is estimated to have 50 year and 100 year floods of 2400m^3/s and 2730m^3/s respectively. What is 200 year flood for the same stream?

7. a) Discuss the significance of stream gauging. Explain the procedure of stream flow measurement by area-velocity method.
b) Write a note on i) envelope curve ii) rational formula of estimating floods.

8. a) Describe recuperation test for an open well.
b) In a recuperation test on an open well, the water level was depressed by 4m and it was observed to rise by 2.5m in 90 minutes. What is the specific capacity of the well? What would be the yield from the well under a depression head of 3m, if the diameter of the well is 7.5m?

CODE No.:10BT50104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November – 2012

SOIL MECHANICS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is a soil? What are the mineral constituents of a soil? Explain with the help of neat sketches. The structure of any three clay minerals.
b) The mass of a moist sample collected from the field is 645 gm, and its oven dry mass is 405.76 gm. If G=2.68 and the void ratio of the soil in the field is 0.83, determine (i) moist density in the field, (ii) dry density in the field, (iii) amount of water to be added per m^3 of soil in the field for saturation, (iv) saturated density.

2. a) Define and explain: Liquid limit; Plastic limit; Shrinkage limit; and Plasticity index. Briefly describe the procedure to determine the liquid limit of a soil.
b) The dry unit weights of a sand in the loosest and densest states are respectively 13.34 kN/m^3 and 21.40 kN/m^3. Assuming the specific gravity of the solids is 2.67, determine the relative density of sand with porosity of 30%.

3. a) What are the methods of estimation of capillary raise in soil? What is the range of capillary raise in different soils?
b) Determine the average vertical and horizontal permeability of a soil mass made up of three horizontal strata, each 1m thick, if the coefficient of permeability of three strata are $1x10^{-2}$ cm/s, $3x10^{-2}$ cm/s, and $8x10^{-3}$ cm/s.

4. a) Enumerate effective stress principle. Is effective stress a physically existing one or not? Explain with the help of a neat sketch the concept of effective stress, total stress and pore water pressure.
b) Explain the step by step procedure for constructing top flow line in an eastern embankment with horizontal drainage filter. What are the corrections to be applied?

5. a) Discuss the essential differences between Boussinesq's and Watergoard's theories. For which condition both these theories yield approximately the same value of vertical stress.
b) Two railway wagon lines in a harbour yard are located 6 m centre to centre. The average load per meter 5mn in the lines are 100 and 8 0kN/m. Find the vertical stress induced by this loading at a depth of 2m beneath each load and half way between them.

6. a) 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) What is import by pre consolidation pressure? Explain with the help of a neat sketch, the Casagraund's procedure to determine pre consolidation pressure.

b) A layer of clay 8 m thickness is located between two sand layers. The coefficient of consolidation of the clay is $5x10^{-2}$ nm^2/sec. the fill material was placed over a very large area above the top sand layers. After 3 years what percentage of the additional pressure due to the fill material will be carried by the soil grains at the middle of the clay layer.

8. a) What are the shear strength characteristics of cohesionless soils? What is critical void ratio? Explain the phenomenon of liquefaction.

b) The friction angle ϕ' of a normally consolidated clay specimen, determined from a drained traxial shear test is 25^0. The unconfined compressive strength of a similar specimen was found to be 100 kPa. Determine the pore water pressure at failure for the unconfined compression test.

CODE No.:10BT50105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

ENGINEEING GEOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Define the term 'weathering'. Give the classification of weathering highlighting its relevance to civil engineering studies.

2. Write physical properties of the following four minerals:
a) Quartz b) Biotite c) Talc d) Magnetite e) Graphite

3. Explain the following.
a) Structures of sedimentary rocks with neat sketches.
b) Properties of Conglomerate and shale
c) Dyke and Sill
d) Cataclastic and Dynamothermal metamorphism.

4. Write about classification of folds with neat sketches and how you take up construction of roads, tunnels and reservoirs in folded structures.

5. Elucidate the following terminology:
a) Zone of aeration
b) Perched water table
c) Aquifer with example
d) Aquiclude with example

6. Draw the neat sketch of Wenner and Schlumberger electrical resistivity technique arrays and describe its importance in Civil Engineering studies.

7. Enumerate the different geological factors contributing to the success of a reservoir.

8. How the tunnels are classified. Discuss the importance of geological investigations in selection of a tunnel alignment.

CODE No.:10BT50201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

POWER ELECTRONICS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the different modes of operation of a thyristor with the help of its static V-I characteristics?
b) Explain in detail the turn-off mechanism of an SCR?

2. 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) Give the design details of snubber network for dc circuit?
b) Explain in detail the following over voltage protecting device: metal oxide varistor (MOV).

4. a) Explain with the help of neat power diagram and associated wave forms, the operation of a 1-Ø , half wave controlled converters with
i) Resistive load ii) Inductive load
b) Single phase half controlled bridge converter feeds an inductive load. Determine the average load voltage and load current for a firing angle of 30°and 120° respectively. The input A.C voltage is 230V and load resistance is 10Ω and Inductance is 10mH.

5. a) Explain with neat circuit diagram the basic principle of a DUAL converter.
b) Compare the different modes of operation of dual converter.

6. a) Explain the operation of single-phase step-up cyclo-converter.
b) A single -phase bridge type cyclo-converter has input voltage of 230V, 50Hz and load of R=10Ω output frequency is one-third of input frequency. For a firing angle delay of 30°, calculate rms value of output voltage and rms current of each converter.

7. Derive the expression I_{max} and I_{min} currents for a Type-A chopper with RL load.

8. a) Draw and explain the simple SCR series inverter circuit employing class-A type Commutation.
b) Draw and discuss the important waveforms. State the limitations of this Series inverter.

CODE No.:10BT50202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

AC 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 chording factor of an alternator.
b) Calculate the rms value of induced emf per phase of a 10 pole, 3-phase, 50 Hz alternator with 2slots/pole/phase and 4 conductors per slot. Assume coil span of 150 electrical degrees. Flux per pole has a fundamental component of 0.12 Wb and a third harmonic component of 20% of the fundamental. What is the value of line-line EMF?

2. a) Define the following terms
i) Harmonics ii) Armature reaction iii) Leakage reactance
iv) Synchronous reactance v) Synchronous impedance
b) Discuss the load characteristics of an alternator for different load power factors along with phasor diagrams.

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) What is Synchronization? Explain any two methods of synchronization of alternators.
b) Two 30 KVA, 400 V, 3 Phase alternators in parallel supply a total load of 60 KVA at 0.9 p.f lagging. If one alternator shares half the power at 0.707 p.f. Determine the power factor and KVA shared by the other alternator.

5. a) Explain various methods of starting of synchronous motor.
b) Write short notes on the following.
i) Synchronous condenser ii) Hunting in synchronous motor.

6. a) Explain the differences between capacitor start, capacitor start-capacitor run and permanent split capacitor motors.
b) In a 230 V, 4-pole, single-phase induction motor, the gross power of positive sequence and negative sequence fields are 210 W and 30 W respectively at a 1425 rpm. If the no load losses are 90 W. Find shaft torque.

7. a) Explain the working principle and applications of reluctance motor.
b) Explain the characteristics of AC & DC series motor.

8. Write a short note on following:
a) Stepper motor
b) Synchronous
c) Servo motors

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

ELECTRICAL POWER TRANSMISSION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Name and explain the four parameters on which the performance of a transmission lines as an element of power system depends.
b) Show that the inductance per loop meter of a two-wire transmission line using solid round conductor is given $L = 4x\ 10^{-7}$ In [D/r] H.

2. a) Explain under which circumstances we will consider T-representation and Π -representation for transmission lines.
b) For a 3φ 400kv line A = D= 0.86, B= 13.2Ω, C= 0.002 mho, obtain the regulation when the line is delivering 120 MVA at 0.8 p.f. lag.

3. a) Explain the factors affecting corona loss in transmission lines.
b) A 3-φ, 220 k v, 50 Hz transmission line has equilateral triangular spacing of 2m side. The conductor diameter is 3 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. Prove that the receiving end voltage is more than sending end voltage at no load condition with help of phasor diagrams.

5. a) What are the advantages of per-unit system of representation? Explain.
b) Describe the Symmetrical component transformation.

6. a) Explain what is meant by a string efficiency of a suspension insulator consists of 'n' number of units. What causes the efficiency to be less than 100 percent? Describe any one method of improving the same.
b) A string of four suspension insulators is to be graded to obtain uniform distribution of voltage across the string. If the capacitance to ground of each unit is 10% of the capacitance of the top unit, determine the capacitance of the remaining three units.

7. a) What is a sag template? What are its advantages?
b) Calculate the minimum sag permissible for a 160 m span, 1 cm diameter copper conductor allowing a maximum tensile stress of 2000 kg/cm^2. Assume a wind pressure of 4 kg/cm^2 of projected area and ice coating of 1 cm. Specific gravity of copper is 8.9 gm/cm^3.

8. a) Draw the cross-sectional of an insulated cable and explain the significance of the various layers.
b) A single-core 66kV cable has a conductor diameter of 2cm and as health of inside diameter 5.3 cm. The cable has an inner layer of 1 cm thick of rubber of dielectric constant 4.5 and rest impregnated paper of dielectric constant 3.6. Find the maximum stresses in the rubber and in the paper.

CODE No.:10BT50401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

ANALOG COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With a neat sketch explain the time domain description of AM wave.
b) Explain about square law modulator and show that the unwanted terms are removed by the tuned filter at the modulator output. Provided that it satisfies the following specifications. Mid band frequency = F_c , bandwidth = 2ω, F_c<3 ω.

2. a) Explain the generation of DSB-SC signal using balanced modulator.
b) Explain detection of DSB-SC modulated signal using coherent detector and explain the drawbacks of it.

3. a) Explain the detection of SSB signal using coherent detection.
b) Give the time domain and frequency domain representation of VSB and define an expression for transfer function of the VSB filter.

4. a) Explain the generation of WBFM signal using Armstrong method.
b) Explain demodulation of FM signal with the help of PLL.

5. a) Derive an expression for signal to noise ratio in SSB system.
b) Explain threshold effect in AM and FM systems.

6. a) Give the classification of transmitters in detail.
b) Explain the operation of variable reactance type FM transmitter.

7. a) Explain the principle of AGC in a receiver and discuss the types of AGC in detail.
b) Explain the drawback of TRF receiver in detail and how those can be rectified using Super heterodyne principle.

8. a) What is pulse width modulation? What other names does it have? How is it Demodulated?
b) What is multiplexing and explain Frequency Division Multiplexing?

CODE No.:10BT50402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

ANTENNAS AND WAVE PROPAGATION

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define and explain the following.
i) Directivity ii) Beam width iii) Radiation resistance
b) Develop the relation between the effective area and directivity D of an antenna operating at a wavelength of λ.

2. a) Derive the expression for radiation resistance of alternating current element.
b) An antenna has $R_r=73\Omega$, $R_L=2\Omega$. Computes its efficiency.

3. a) Explain the operation of Binomial Arrays.
b) What is uniform linear array? Show that the SLL for a large array is -13.2dB.

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) Explain the Cassegrain system of reflectors with neat sketch. Discuss about the feed mechanism
b) What is micro strip antenna? What are the advantages and disadvantages?

6. a) Derive reciprocity theorem for antenna. Show that the transmitting and receiving patterns of an antennas are equal.
b) Establish the mathematical relations for the profiles of a plane convex dielectric lens. Explain its characteristics.

7. a) Describe briefly the salient features of ground wave propagation.
b) What should be the polarization of EM wave for the ground wave propagation? Justify.
c) Explain the term: wave tilt of surface waves.

8. a) Derive the expression for refractive index of ionosphere.
b) Derive the relationship between MUF and skip distance.

CODE No.:10BT50403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Determine the voltage gain, differential input resistance and the output resistance of a single-input, unbalanced-output differential amplifier.
b) Explain the role of a level translator circuit in cascaded differential amplifier.

2. a) Draw the block diagram of an Op amp and explain in detail.
b) Compare a BJT Op amp with JFET and MOSFET Op amps.

3. a) Explain and draw the practical integrator circuit by using Op amp and derive the expression for V_0.
b) Design a practical integrator circuit to properly process input sinusoidal wave form up to 1 KHz. The input amplitude of signal is 10mv.

4. a) Prove that an Op amp can be used to find the log of a given analog signal.
b) How can a multiplier and divider circuit be constructed with log and antilog amplifiers?

5. a) Draw the circuit diagrams of first-order and second-order high-pass filters and explain their operation.
b) Design a wide band-pass and a narrow band-pass filter to satisfy the given requirements.

6. a) Design an astable multivibrator using 555 timer to get a square wave of 1 kHz with 50% duty cycle. Explain its operation with relevant waveforms.
b) Write notes on IC 565 frequency multiplier.

7. a) Explain the application of 565PLL.
i) Frequency multiplier ii) FSK
b) Draw and explain the operation of sample and hold circuit using Op amp.

8. a) Draw the circuit diagram of an improved sample and hold configuration using operational amplifier and explain its working.
b) Draw the schematic diagram of IC1496 and explain its operation.

CODE No.:10BT50404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the resistive model of a CMOS inverter and explain its behavior for LOW and HIGH outputs.
b) Explain the following terms with reference to CMOS logic
i) Logic levels ii) power supply rails iii) DC noise margin iv) Propagation delay.

2. a) List out bipolar families and compare them with reference to propagation delay, power dissipation, speed-power product and low level input current
b) Explain in detail about CMOS/TTL interface.

3. a) What are Sub-Programs? Give a detail view of functions and Procedures.
b) Explain the Implicit and Explicit visibility of a library in VHDL.

4. a) Explain what are the structural design elements.
b) Write a structural code model for the $(ab + b\bar{c}d)$.

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. Explain the operation of Barrel shifter and write VHDL code for the corresponding.

7. a) Explain the difference between D-latch and D-Flip-flop using the process block in VHDL.
b) Write VHDL code for 4-bit serial-in parallel-out register.

8. a) Explain the internal structure of an 8x4 static RAM ?
b) Draw the basic cell structure of dynamic RAM? What is the necessity of refresh cycle?

CODE No.:10BT50421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

ELECTROMAGNETIC THEORY

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A point charge of 6μc is located at the origin and infinite uniform line charge density of 180 nc/m lies along X-axis and uniform sheet charge with surface charge density=25 nc/m^2 lies in the Z=0 plane.
   a) Find Electric flux density.
   b) Total flux leaving the surface of 4m radius centered at the origin.

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) If H is given by $H = y\cos 2x\bar{a}x + (y + e^x)\bar{a}z$ A/m. Determine current density J at origin.
   b) Find the magnitude of the magnetic flux density in a material for which
      i) The magnetisation is 2.8 A/m and the magnetic susceptibility is 0.0025.
      ii) The magnetic field is 1300 A/m and the relative permeability is 1.

4. a) What are the boundary conditions of magnetic field? Explain.
   b) Medium 1 ($z < 0$) is filled with a material whose relative permeability is 6, and medium 2 ($z > 0$) is filled with a material whose relative permeability is 4. If the interface carries current of a_y/μ_0 mA/m, and $B_2 = 5a_x + 8a_z$ mWb/m^2, find H_1 and B_1.

5. a) Show that intrinsic impedance of free space is 377Ω.
   b) Derive the propagation characteristics of EM waves in good dielectrics.

6. a) Derive expression for Reflection and Transmission coefficients of an EM wave when it is incident normally on a dielectric.
   b) A plane wave traveling in free space has an average poynting vector of 5 watts/m^2. Find the average energy density.

7. a) Explain about nuclear electromagnetic.
   b) Distinguish natural and man-made EMI sources.

8. Write the following:
   a) Electrical bonding
   b) System grounding for EMC
   c) Measurement of ground resistance.

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

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) Draw the basic block diagram of a general op-amp and explain the operation of each block.
b) Define and explain the significance of the following OPAMP parameters.
i) CMRR ii) PSRR and iii) Slew rate

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) Give the function block diagram of NE 565 PLL and make circuit connections to track the input signal and explain its working principle.
b) How is an Astable multivibrator using 555 timer connected into a pulse position modulator? Explain with a circuit diagram.

4. a) Design CMOS transistor circuit for 2-input NOR gate. With the help of function table explain the circuit.
b) Design a CMOS transistor circuit that has the functional behavior.
$f(X) = \overline{(A + B).(B + C)}$

5. a) Draw the circuit diagram of basic CMOS gate and explain the operation.
b) List out different categories of characteristics in a TTL data sheet. Discuss electrical and switching characteristics of 74LS00.

6. a) What is known as structural design? Explain briefly about structural design elements.
b) Describe the time dimension of VHDL.

7. a) Design a full adder using two half adders. Write VHDL data flow program for the same.
b) Write a short note on the combinational multipliers.

8. a) Design a 4-bit ripple down counter using T-flip-flops.
b) Briefly discuss about the impediments to synchronous design.

CODE No.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

PRINCIPLES OF COMMUNICATIONS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Find the convolution of two signals $x(t) = e^{-2t}u(t)$ and $h(t) = u(t)$.
b) Find the Fourier Transform of
i) $\cos w_o t$ ii) Gate function

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) Explain the generation of FM using Narrow Band Frequency Modulated method.
b) Explain the detection of FM using Ratio detector.

4. a) What is sampling and derive sampling theorem for band limited signals.
b) What is multiplexing and explain Time Division Multiplexing.

5. a) Derive the quantization error for PCM.
b) Explain about delta modulation.

6. a) Explain DPSK modulator and DPSK demodulator with block diagram.
b) Draw the modulation waveforms for transmitting binary information [1 0 1 1 0] over base band channels using sinusoidal carrier for the following modulation schemes.
i) ASK ii) FSK

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 length ii) The efficiency
iii) Redundancy using Huffman coding.

8. a) Explain about Hamming codes with example.
b) Write short notes on block codes.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

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) How do you calculate performance analysis of Time Complexity and explain with an example?
b) Write an algorithm to find sum of 'n' numbers. Derive its Time and Space Complexity.

2. a) Explain **union** and find algorithms with examples.
b) Write an algorithm to find the minimum cost spanning tree. Explain the algorithm with an example.

3. a) Explain the general method of Divide and Conquer.
b) Write Quick sort algorithm.

4. Explain the Dijkstra's algorithm for single source shortest path problem with an example.

5. a) Explain Traveling Sales Person problem with Dynamic programming.
b) Describe any two shortest path algorithms.

6. a) Draw the state space tree for m coloring when n=3 and m=3.
b) Solve the 8-queens problem using backtracking.

7. a) Explain the general method of Branch and Bound.
b) Explain the applications of Branch and Bound.

8. a) Explain NP class problem with suitable example.
b) Differentiate between NP complete and NP-hard.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

MICROPROCESSORS AND INTERFACING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw and explain the architecture of 8086 microprocessor.
b) Explain the register organization of 8086.

2. a) Explain the following 8086 instructions and their use
i) XLAT ii) DAS
b) Write an assembly language program to exchange a block of N data bytes between source and destination.

3. a) Interface eight 8K chips of RAM and four 8K chips of EPROM with 8086? Interface the RAM bank at a segment address 0B00H and the EPROM bank at a physical address F8000H.
b) Discuss the priorities of DMA request input of 8257.

4. a) Write briefly about the different modes of operation of 8255.
b) Explain how a keyboard is interfaced to 8086 through 8255. Draw the necessary interface circuit.

5. a) Explain the importance of 8259 interrupt controller and explain how does it handle the interrupt.
b) Give an interfacing diagram which shows the connections between 8086 and 8259.

6. a) Explain the working of TXRDY and RXRDY signals in 8251 USART.
b) Draw and discuss the status word format of 8251.

7. a) Draw and explain the flag register of 80286 microprocessor.
b) What are the salient features of protected virtual memory?

8. a) Discuss the advantages of microcontroller based systems over microprocessor based systems.
b) Explain the function of watchdog timer.

CODE No.:10BT50503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

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) Explain DDL and DML commands in detail with examples.
b) What are the various responsibilities of a DBA?

2. a) Describe the relationship between Entities, Attributes, Entity sets and key.
b) Write short notes on the following and give examples to each
i) Key constraints
ii) Participation constraint
iii) Weak entity

3. a) How is a view created and dropped? What are the problems that are associated with updating of views?
b) Consider the following relations and write relational algebra queries:
Employee (Fname, SSN, Salary, Super-SSN, DNo);
Works ON (ESSN, PHNO, hours);
Department (Dname, Dnumber, Mgr-SSN);
Dependent (ESSN, Dependentname);
i) Retrieve the highest salary paid in each department
ii) Retrieve the name of managers who have more than two dependents
iii) Retrieve the number of employees and their average salary working in each department.

4. For the following relational database write the expressions in SQL. (Assume the data according to the questions given)
Branch Schema (Branchname, Branchcity, Assets)
Customer schema(Customername, Customerstreet, Customercity)
Loan schema(Branchname, Loan number, Amount)
Borrower schema(Customername, Loannumber)
Account schema (Branchname, Accountnumber, Balance)
Depositor schema(Customername, Accountnumber)
i) Find the names of all branches in Loan Schema.
ii) Find all customers having loan, account or both at a bank.
iii) Display customer names in alphabetical order who have a loan at the Perryridge branch.
iv) Find set of all customers who have an account at the bank but not a loan account.
v) Find the largest account balance in the bank
vi) Find the names of all branches with customers who have an account in the bank and who live in Harrison.
vii) Find the names of all customers who have an account at all the branches located in Brooklyn.

5. a) Discuss about lossless join decomposition
b) Explain the 4NF and 5NF

6. a) What is thrashing. What should a DBA do if the system thrashes?

b) What are the different functionalities offered by transaction manager and recovery manager?

7. a) How does the Thomas write rule improve concurrency?
b) When does two schedules conflict become equivalent? Give an example.
c) How is it the precedence graph related to conflict serializability?

8. a) Why is a B+ tree a better structure than a B-tree for implementation of an indexed sequential file ? Explain this with an example.
b) Explain indexed sequential access method.

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

OPERATING SYSTEMS

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

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

Answer any FIVE questions
All questions carry equal marks

1. Explain in detail about system structure and its components.

2. Distinguish between pre-emptive and non pre-emptive scheduling. Explain each type with an example.

3. a) Define the structure for critical section.
b) What is critical section problem?
c) Explain two process solutions and multiple process solutions.

4. a) What are the methods for handling deadlocks?
b) Define deadlock prevention.
c) Explain about the methods used to prevent deadlocks.

5. a) What do you mean by address binding?
b) Differentiate logical address and physical address.
c) Describe First fit, best fit and worse fit strategies in terms of memory allocation scheme. Explain their advantages and disadvantages.

6. a) Explain various file allocation methods in detail.
b) Give short notes on Linux file system and Windows XP file system.

7. a) What are the various disk-scheduling algorithms?
b) Explain the various disk scheduling techniques with examples.

8. What is Domain protection? Explain how domain protection is done in UNIX and MULTICS.

CODE No.:10BT51001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November -

PROCESS CONTROL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Obtain the expression for the resistance and capacitance for gas system.
b) Differentiate between batch and continuous process.

2. a) What is integral wind up? Explain.
b) Can derivative controller be used alone? Justify.

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) Determine the tuning parameters of the P + reset controller using one - quarter decay ratio criterion which is used to control the process with K_p=0.1 and τ_p = 10.
b) An unstable first-order process with transfer function $G_P(s) = 2/(s - 4)$ is controlled by a proportional controller with gain K_C. Assuming that $G_m = G_f = 1$, do the following:
i) Determine the range of K_C values which yields stable closed loop responses.
ii) Find the value of K_C for which the closed loop pole is zero. Using this value of K_C, compute the closed-loop response to a unit step change in the set point. Is the response stable or unstable?

5. a) Explain the principle of current to pressure conversion with necessary diagram.
b) Draw the construction and explain the working principle of reverse acting pneumatic actuators.

6. a) How control valve characteristics are selected in process control application?
b) Draw the construction and explain the working principle of any two types of flow control valves.

7. a) Compare the single loop and cascade controllers.
b) Explain in detail about ratio control with a suitable example.

8. Write short notes on:
a) Material balance in a distillation column.
b) Quality control (top and bottom product) in a distillation column.

CODE No.:10BT51002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

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 plainness with a neat diagram.
b) Explain how Planimeter is used to measure area.

2. a) Explain the principle, operation and application of Magnetostrictive transducer.
b) Explain the principle and operation of Tachogenerators and Stroboscope.

3. a) Describe different sources of error in U-tube manometer and explain how corrections can be applied to minimize these errors.
b) Discuss in detail about Thermal Conductivity Gauge with a neat diagram.

4. a) i) Explain the principle and operation of Positive displacement type flow meter.
ii) A rotameter has been calibrated in l/min for water. It is to be used for metering brine solution of specific gravity is 1.15.For this purpose the density of the float has been changed from 2000 kg/m^3 to 2250 kg/m^3 without altering the shape and volume of the float. What correction factor should be introduced in the original scale in order to use the rotameter for the brine solution?
b) Explain the principle, working and applications of Laser Doppler Velocimeter.

5. a) Explain the principle and working of Air Pressure Balance Method used to measure density.
b) Explain the working of Two Float Viscorator with a neat diagram.

6. a) Explain Radiation Pyrometers with necessary diagrams.
b) Describe the measurement of temperature using Thermistors.

7. a) Write short notes on float type level gauges.
b) Describe the capacitance type level gauging.

8. a) With a neat sketch, explain the principle, working, advantages and disadvantages of LVDT Accelerometer.
b) Describe the working of Gyroscope with necessary diagrams.

CODE No.:10BT51201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

SOFTWARE ENGINEERING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is agility? What is agility process? List out the principles of agility.
b) If software does not wear out. Why does it deteriorate?

2. a) Draw spiral model and explain each and every region of software development.
b) Define functional and nonfunctional requirements of software.

3. a) Explain about different types of behavioral models.
b) Briefly discuss about requirements management.

4. a) What is Design quality? Explain the Quality attributes.
b) Explain in brief Taxonomy of Architecture style.

5. a) What is a frame work and how does it differ from a pattern?
What is an idiom and how does it different from a pattern?
b) How do architectural patterns differ component patterns?

6. a) Explain the steps involved in software testing.
b) Explain different test strategies for conventional software.

7. a) Explain object-oriented metrics.
b) Write short notes on software risks.

8. You have been appointed as a project manager within an information systems organization. Your job is to build an application that is quite similar to other your team has built, although this one is larger and more complex. Requirements have been thoroughly documented by the customer. What team structure would you choose and why? What software process mode would you choose and why?

CODE No.:10BT51202 **SVEC-10-RA**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

COMPUTER GRAPHICS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain different physical input devices.
b) How color raster images represented explain?

2. a) Write and explain midpoint circle generation algorithm.
b) Discuss the steps involved in the ordered edge list polygon filling algorithm.

3. a) Elucidate Cohen-Sutherland line clipping method in detail.
b) Do hidden-surface problem? Also argue in brief how can you identify and remove these surfaces.

4. a) Explain the steps involved in deriving window to view-port transformation.
b) Explain the working of the Sutherland Hodgeman algorithm for polygon clipping with the help of suitable example.

5. a) Explain basic illumination models and polygon rendering methods?
b) Explain different representation of polygon meshes in solid modeling?

6. a) Develop transformation matrix for 2-D viewing transformation in explain in brief.
b) Explain how category of a line is find out for its visibility using region codes in when Sutherland line clipping algorithm.

7. a) Illustrate Sutherland - Hodgeman algorithm of clipping with appropriate examples.
b) Discuss in detail the transformations and their properties with suitable diagrams.

8. a) Explain linear list notations of animation languages.
b) Write short note on JPEG image compression standard.

CODE No.:10BT51202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

COMPUTER GRAPHICS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain different physical input devices.
b) How color raster images represented explain?

2. a) Write and explain midpoint circle generation algorithm.
b) Discuss the steps involved in the ordered edge list polygon filling algorithm.

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7. a) Illustrate Sutherland - Hodgeman algorithm of clipping with appropriate examples.
b) Discuss in detail the transformations and their properties with suitable diagrams.

8. a) Explain linear list notations of animation languages.
b) Write short note on JPEG image compression standard.

CODE No.:10BT51301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

ADVANCED CONTROL SYSTEMS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. $\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} 0 & 1 \\ -4 & -5 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u \quad \& \quad y = \begin{bmatrix} \frac{1}{3} & -\frac{1}{3} \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$

Obtain the canonical form of the state model.

2. a) Derive the necessary conditions to be satisfied for system to be controllable of continuous-time systems.

b) Consider the system given by

$$\dot{X}(t) = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & -0.5809 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 4.4537 & 0 \end{bmatrix} X(t) + \begin{bmatrix} 0 \\ 0.9211 \\ 0 \\ -0.3947 \end{bmatrix} u(t)$$

$$y(t) = \begin{bmatrix} 0 & 0 & 1 & 0 \end{bmatrix} X(t)$$

Investigate controllability and observability.

3. What is describing function? Explain how describing function analyzes nonlinear control systems.

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. Explain the Lyapunov's stability analysis of the dynamical systems.

6. a) Explain the reduced order state observer.

b) Transform the system with

$$A = \begin{bmatrix} 0 & 1 & 0 \\ 3 & 2 & 0 \\ 1 & 1 & 1 \end{bmatrix}; B = \begin{bmatrix} 0 & 0 \\ 1 & 0 \\ 0 & 1 \end{bmatrix}; C = \begin{bmatrix} 1 & 2 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

Into equivalent observable companion form

7. Write short notes on the following for optimal control system design:

a) Minimum-Time problem.

b) State regular problem.

c) Infinite - time state regulator problem.

8. a) Explain the isocline method for construction of phase-plane portrait.

b) Determine the locations and types of singular points of the nonlinear system described by following:

$$\dot{x}_1 = 0.3 - 0.1x_1 + x_2 - 0.188x_1^2 x_2 - 0.75x_2^3$$

$$\dot{x}_2 - 0.25x_1 - 0.1x_2 + 0.047x_2^3 + 0.188x_1 x_2^2$$

CODE No.:10BT51302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

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) With a neat diagram explain about Cohen-Coon method.
b) Explain with the flow chart a procedure for selecting controllers.

3. a) With a neat diagram explain about floating object method.
b) Derive the response of first order instrument for Ramp input.

4. a) Explain the pneumatic displacement type PD controller with a neat sketch.
b) Explain the electronic Integral and proportional controller.

5. a) Draw the feed forward and feed back control systems that regulate the flow through the pipe. Discuss about both the control systems and give reasons to select any of the two systems in maintaining the desired flow.
b) A fully open valve passes 200 gpm of water at a pressure differential of 10 psi. Calculate valve sizing.

6. a) Design a controller to mix air and fuel with a ratio of 3:2 in a combustion chamber.
b) Design a simplified decoupling system for the control of temperature and flow of mixture of cold and hot water, whose flow rates are the manipulated variables.

7. a) Discuss in detail about stability of exothermic reactors.
b) Explain in detail about principles governing the conduct of chemical reactions.

8. Explain in detail about instrumentation and control relevant to cement industry.

CODE No.:10BT51501 SVEC-10 (RA)

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

SYSTEM SOFTWARE

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the function of segment and explain various categories of segments.
b) Distinguish between an .exe and a .COM program.

2. Explain about LOOP and a conditional jump instruction with examples.

3. a) Explain arithmetic micro operations with examples.
b) Describe the features of the following functions for INT 21 H keyboard input:
i) 01 H ii) 07 H iii) 08 H iv) 0A H

4. a) Distinguish between the body of a macro definition and the macro expansion with suitable example.
b) What do you understand by Nested Macro? Explain with an example.

5. Describe the following in detail:
a) Conditional macro expansion
b) MASM macro processor
c) ANSI C macro language.

6. Design an ASSEMBLER for a hypothetical assembly language using single pass assembler. Assume suitable data.

7. a) Write short notes on Bootstrap loaders.
b) Discuss the design procedure for direct-linking loaders.

8. Explain the editor structure with neat diagram.

CODE No.:10BT51501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

SYSTEM SOFTWARE

[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 about Registers.
b) Define directives. Explain the following directives:
i) PROC directive
ii) Conventional segment directives
iii) Simplified segment directives

2. Explain about Programming Logic and control.

3. Explain Advanced screen and keyboard processing.

4. a) How can you define code segment as a public? Explain.
b) Write short notes on the following directives:
i) Local ii) Purge iii) Conditional

5. a) Explain with an example instruction sequence the conditional macro expansion.
b) Distinguish between two pass and single pass algorithm for Macro Processors.

6. Distinguish between one pass and multi pass assemblers.

7. a) Distinguish between Absolute Loader and Relocatable Loader.
b) Explain briefly the design procedure for an Absolute Loader.

8. Explain the editor structure with neat diagram.

CODE No.:10BT51502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

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) Describe in brief about Spiral Model. Suggest the application where Spiral Model can be used effectively.
b) Differentiate between Class Based, Flow Based and Scenario Based Modeling.

2. a) Explain about the different product metrics used in software engineering.
b) Describe the COCOMO models.

3. a) Describe the basic building blocks used in UML.
b) Develop the usecase for searching accommodation online in hotels of particular place.

4. a) Draw the stages of Requirement Engineering Process & Explain any one stage.
b) Explain scenario based modeling.

5. a) Explain the software architecture for design engineering.
b) Distinguish between object oriented design and structured design.

6. a) Explain the art of debugging used in software engineering.
b) Describe the different object oriented testing methods.

7. a) Software Engineering - A Layered Technology. Explain.
b) What kind of changes would you make in a Waterfall procedure to ensure the properties of Waterfall model is preserved while errors can be removed at any stage of the Model? Is it possible? Prove your claim.
c) Explain Flow Oriented Modeling.

8. a) Explain in detail: RMMM.
b) Draw an Activity Diagram for a Facebook User.
c) Write a short note on Unit Testing.

CODE No.:10BT52301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November – 2012

GENETIC ENGINEERING

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Define Repressible system? Explain with an example?

2. a) What are transposon? Explain their applications.
b) Classify the Plasmids and write their functions.

3. Explain the construction and uses of recombinant PUC vectors?

4. Write a note on the following:
a) Differentiate between Plasmid and Cosmid.
b) Manipulation of purified DNA.

5. a) Explain the Genomic and cDNA library construction and their applications.
b) List out the blotting methods used in genetic engineering and applications.

6. Describe the Principle and applications of multiplex PCR and Real time PCR technology.

7. Write short notes on any two:
a) Baculo expression of proteins.
b) Yeast expression of proteins.
c) Mammalian cell expression of proteins.

8. What are transgenic animals? Discuss about the methods of transgenic animal production?

CODE No.:10BT52302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

PLANT BIOTECHNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Give a detailed account on Somatic embryogenesis.

2. Explain about methods of protoplast isolation and culture with suitable examples?

3. How can haploids be produced? Add a note on their applications.

4. Explain the methods to enhance the production of secondary metabolites.

5. Write in detail about *Agrobacterium* mediated transformations.

6. Explain about the strategies used for genetically engineered plants for insect resistance?

7. What is abiotic stress? Explain about the strategies employed for developing salt resistance plants.

8. Write notes on any two of the following.
   a) SNPs
   b) RFLP
   c) Co-dominant markers

CODE No.:10BT52303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

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 production of ethanol with the help of a flow chart.

2. Discuss in detail the production and recovery of Penicillin.

3. Explain the commercial production of Cellulases and applications.

4. Describe the monoclonal antibodies production and its FDA approved drugs and applications.

5. What are the characteristic features of Biopolymers? Explain different stages in the production of Biopolymers.

6. Discuss in detail aerobic treatment of sewage water.

7. What is Bioremediation? Explain in detail about Bioremediation principles and strategies.

8. Write an essay on Biological detoxification with suitable examples.

CODE No.:10BT52304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

HEAT TRANSFER IN BIOPORECESSES

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain how heat flow through a series of resistances is computed
b) A flat furnace wall is constructed of a 114 mm layer of Sil-o-cel brick, (k=0.138 W/m-^{o}C) backed by a 229 mm layer of common brick (k=0.1.38 W/m-^{o}C). The temperature of the inner face of furnace wall is 760^{o}C and that of the inner face is 76.6^{o}C.
i) What is the heat loss through the wall?
ii) What is the temperature of the interface between the refractory brick and common brick?

2. Explain unsteady heat transfer by conduction through infinite cylinder and semi infinite slab.

3. Write the Characteristics of film wise condensation.

4. Using dimensional analysis, find out the relation ship among various dimensionless numbers in natural convection.

5. Describe the construction of long tube evaporator with upward flow.

6. a) Discuss the general design of shell and tube heat exchanger with the help of neat schematic diagrams.
b) Define LMTD and explain the reason for which this concept is introduced in heat exchanger design. Explain why correction factors are being used when applying this technique for the design of multi-pass heat exchangers.

7. a) Describe the various feeding arrangements for multiple effect evaporators with the help of neat schematics.
b) A solution of organic colloids is to be concentrated from 20 to 65 percent solids in a vertical tube evaporator. The solution has negligible elevation in boiling point, and the specific heat of the feed is 0.93. Saturated steam is available at 0.7 atm abs, the pressure in the condenser is 100mm Hg abs. The feed enters at 16°C. The overall coefficient sis 1,700 w/m^{2} °C. The evaporator must evaporate 20,000 kg of water per hour. How many square meters of surface are required, and what is the steam consumption in kilograms per hour?

8. a) Compare and contrast the performance of direct steam injection sterilizers with plate heat exchangers for continuous sterilization.
b) Give the applications of heat transfer in the design of a Batch sterilizer.

CODE No.:10BT52305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

BIOCHEMICAL REACTION ENGINEERING

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define elementary and non-elementary reaction.
b) The decomposition of reactant A at 400 ^{o} C for pressures between 1 and 10 atm follows a first order rate law. Show that a mechanism similar to azomethane decomposition

$A + A \rightleftharpoons A^* + A$

$A^* \longrightarrow R + S$

is consistent with the observed kinetics.

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. For the reaction in series, k_1 k_2

$A \rightarrow R \rightarrow S$, $k_1 = k_2$,

Find the maximum concentration of R and when it is reached.

4. Derive an expression for the concentration of reactant in the effluent from a series of mixed reactors of different sizes, if the reaction follows first order kinetics and the holding time in the i^{th} reactor is T_i.

5. a) Discuss about the growth cycle phases for batch cultivation
b) What are the methods of evaluation of kinetic parameters?

6. Under appropriate conditions A decomposes as follows $A \xrightarrow[K1= 0.1 /min]{} R \xrightarrow[K2= 0.1/ min]{} S$

R is to be produced from 1000 lit/ hr of feed in which C_{Ao}= 1 mol/lit, C_{Ro}=C_{So}=0

a) What size of plug flow reactor will maximize the concentration of R, and what is that concentration in the effluent stream from this reactor?
b) What size of mixed flow reactor will maximize the concentration of R and what is the $C_{R\,max}$ is the effluent stream from this reactor?

7. a) Derive the energy balance equation for adiabatic operations in a flow reactor.
b) With the help of a graphical representation explain the relation between conversion and temperature for exothermic, endothermic and isothermal reactions.

8. Write the energy balance equations for flow reactors.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November - 2012

THEORY OF COMPUTATION

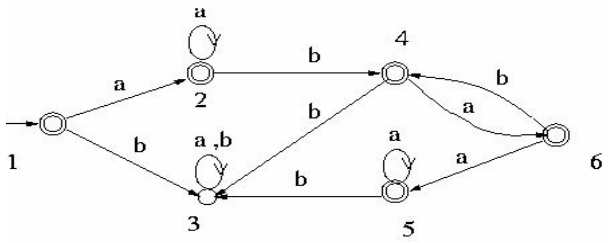
[Computer Science and Systems Engineering]

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) Give DFA which is equivalent to NFA that accepts the set of all strings over {0,1} not containing 101 as a substring.
b) Minimize the following finite automata.



3. a) S.T the Regular Languages are closed under intersection and complementation.
b) P.T the language $L = \{a^i b^{3i} c^n - i,n \geq 1\}$ is not a regular.

4. a) Construct NFA for the following Grammar
i) S→Aa/Bb , A→Aa/a , B→Bb/b ii) S→A0/B1 , A→A0/0 , B→B1/1

b) Check whether the given grammar is Ambiguous or not and derive "aabbabbaba"

S→ASA/ASB/BAS/A/B
A→AS/SA/a/aS
B→b/BS/SB/bS

5. a) What are ambiguous grammars?
b) Convert the following grammar into Chomsky Normal Form
S → ASA | aB, S → B | S, B → b |ε

6. a) State and explain the closure properties of Context Free Languages.
b) Convert the following CFG to Greibach Normal form.

S → AA
A → AAA
A → a
A → bA
A → Ab

7. a) What is counter machine and discuss counter machine are turning equivalent?
b) Design turning machine to accept strings of the language defined as $\{a^n b^n / n >= 1\}$.

8. a) Explain about P and NP Problems.
b) Explain about Undecidability of PCP problem.

❀ ❀ ❀

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations November – 2012

COMPUTER NETWORKS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Write short notes on the following:
   a) Network core with suitable diagrams
   b) Compare Connection oriented and connectionless Services.
   c) What is a Protocol?

2. a) What are the functions of physical layer?
   b) Explain PSTN with neat diagram.

3. a) Describe design issues of Data link Layer.
   b) Define CRC with example.

4. a) Why medium access layer is required.
   b) What is the format of the MAC frame of Ethernet. Explain the fields.
   c) What is random backoff in Ethernet.

5. Explain the following
   a) Internetworking
   b) IP-protocol
   c) IP-Address
   d) Internet protocol advantages and disadvantages.

6. a) Why transport layer is called source to destination layer.
   b) How TCP is used for connection establishment.

7. a) What are the basic tags of HTML. Briefly explain them.
   b) Why Domain name system uses Distributed system.

8. a) Explain Bluetooth with neat diagram.
   b) Explain the 802.15 network with an example scenario.

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

PROBABILITY AND STATISTICS

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) A factory manufacturing television has four units A, B, C, D. The units A,B,C,D manufactures 15%, 20%, 30%, 35% of the total output respectively. It was found that out of their outputs 1%,2%,2%,3% are defective. A television is chosen at random from the output and found to be defective. What is the probability that it came from unit D?

b) A discrete random variable X has the probability distribution
$P(X = 0) = 3C^2, P(X = 1) = 4C - 10C^2, P(X = 2) = 5C - 1$,
where $C > 0$ and $P(X = r) = 0$ for $r \neq 0,1,2$.
i) Find the value of C ii) Find $P(0 < X < 2 / X > 0)$.

2. a) Out of 800 families with 4 children each, how many families would be expected to have (i) 2 boys and 2 girls (ii) atleast 1 boy (iii) atmost 2 girls. Assume equal probabilities for boys and girls.

b) The time (in hrs) required to repair a machine in exponentially distributed with parameter $\lambda = \frac{1}{2}$
i) What is the probability that the repair time exceeds 2 hrs?
ii) What is the conditional probability that a repair takes at least 10 hrs given that its duration exceeds 9 hrs?

3. a) Find the coefficient of correlation between industrial production and export using the following data.

Production (X) :	55	56	58	59	60	60	62
Export (Y) :	35	38	37	39	44	43	44

b) The two lines of regression are $8x - 10y + 66 = 0$, $40x - 18y - 214 = 0$. The variance of X is 9. Find i) the mean values of X and Y
ii) correlation coefficient between X and Y.

4. a) A random sample of 500 oranges was taken from large consignment and 65 of them were found to be bad. Show that the standard error of proportion of bad ones in a sample of this size is 0.015?

b) Explain the following terms with examples
i) Null and Alternative hypothesis ii) Critical region iii) Degrees of freedom

5. a) In a sample of 600 men from a certain city, 450 men are found to be smokers and in a sample of 900 from another city 450 are found to be smokers. Do the data indicate that the two cities are significantly different with the respect to prevalence of smoking habit among men?

b) Two random samples of sizes 400 and 500 have mean 10.9 and 11.5 respectively. Can the samples be regarded as drawn from the same population with variance 25?

6. a) Of a group of patients who complained that they did not sleep well, some were given sleeping pills while others were given sugar pills (although they all thought they were getting sleeping pills). They were later asked whether the pills helped them or not. The results of their responses are shown in table below:

	Slept well	Did not sleep well
Took sleeping pills	9	42
Took sugar pills	17	28

Assuming that all patients told the truth, test the hypothesis that there is no difference between sleeping pills and sugar pills at a significance level of 0.05.

b) A test of breaking strengths of 6 ropes manufactured by a company showed a mean breaking strength of 7750 lb and a standard deviation of 145 lb, whereas the manufacturer claimed a mean braking strength of 8000lb. Can the manufacturer's claim be supported at a 0.01 level of significance?

7. The following are the number of imperfections in rolls of wallpaper: 5, 6, 3, 4, 5, 2, 7, 4, 5, 3, 5, 5, 3, 2, 0, 5, 5, 6, 7, 6, 9, 3, 3, 4, 2and 6. Construct a c chart for the process, and determine whether there is evidence that the process is out of control.

8. Patients arrive at a clinic in a Poisson manner at an average rate of 6 per hour. The doctor can attend to 8 patients per hour on an average. Assuming that the service time is exponential, Find

i) average number of patients in the clinic
ii) average queue length
iii) average number of patients waiting in the queue
iv) average time spent by a patient in the clinic.

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

ENVIRONMENTAL SCIENCES

[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. Write a note on:
a) Environment and Biosphere b) Ecological factors

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) Define and explain in detail about ecological successions.
b) Write a short note on pond, lake and river ecosystems.

4. a) Write about various forms of Pollution and ill effects of pollution with examples of case studies.
b) Write about energy flow in the ecosystem.

5. a) What is mean by energy flow in the ecosystem?
b) What is mean by hydrosere? Explain with suitable examples.

6. a) Explain the Environmental hazard and disaster management.
b) Write note on solid waste management for the clean environment.

7. a) Write a detailed note on human rights.
b) Write an essay on T.B.

8. a) Write an essay on Carbon Credits and discuss with regard to Nagoya protocol.
b) Discuss population growth and its impact on Environment.

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

OPTIMIZATION TECHNIQUES

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the statement of an Optimization problem and discuss about the following.
i) Design vector ii) Design constraints

2. Find the maxima and minima, if any, of $f(x)=4x^3-18x^2+27x-7$.

3. Solve the given problem using simplex method Max $Z = X_1 + X_2$ Subjected to
$2x_1 + 5x_2 \leq 18$
$6x_1 + 5x_2 \leq 30$
$x_1, x_2 \geq 0$

4. a) What is meant by Degeneracy in transportation problem?
b) Find the optimal assignment for the following problem:

		Jobs				
		I	**II**	**III**	**IV**	**V**
Mechanics	**I**	11	17	8	16	20
	II	9	7	12	6	15
	III	13	16	15	12	16
	IV	21	24	17	28	25
	V	14	10	12	11	15

5. Find the minimum of the junction $f = \lambda^5 - 5\lambda^3 - 20\lambda + 5$ using Fibonacci search in the interval (0, 5).

6. Using Steepest Descent method, Minimize $f(x_1,x_2) = x_1 - x_2 + 2x_1^2 + 2x_1x_2 + x_2^2$,
From $x_1 = \begin{pmatrix} 0 \\ 0 \end{pmatrix}$

7. Minimize $f(x_1,x_2) = \frac{1}{3}(x_1 + 1)^3 + x_2$
Subject to $g_1(x_1,x_2) = 1 - x_1 \leq 0$
$g_2(x_1,x_2) = -x_2 \leq 0$
by exterior penalty function method.

8. In a cargo loading problem, there are four items of different per unit weight and value, as given below:

Item, i	**Weight / Unit, w_i**	**Value / unit, v_i**
1	1	1
2	3	5
3	4	7
4	6	11

The maximum cargo load is restricted to 17 units. How many units of each item be loaded to maximize the value?

❀ ❀ ❀

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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. Discuss the methods of demand forecasting.

2. Explain the input -output relationship relating to theory of production.

3. Explain various pricing methods.

4. Describe about Articles of Association of Joint stock company.

5. What is Trial balance? From the following balances prepare Trial Balance of Mr. Babu as on 31-12-2010

Particulars	Rs
Bank	20,000
Sales	30,000
Rent	15,000
Creditors	10,000
Capital	60,000
Purchases	40,000
Furniture	25,000

6. Prepare the Trading and Profit and Loss account and the Balance Sheet of Mr Shine From the following particulars.

Debit Balances	Amount	Credit Balances	Amount
Sundry debtors	1,00,000	Bills payable	85,550
Wages	2,200	Sundry creditors	25,000
Salaries	2,500	Commission Received	1,500
Printing and Stationary	5,000	Returns outwards	4,500
Rent, Rates and Taxes	3,450	Capital	2,00,000
Freight	2,250	Discount received	3,500
Sales Returns	6,000	Interest received	11,260
Motor Vehicles	25,000	Sales	1,50,000
Opening stock	75,550		
Furniture and Fixture	15,500		
Purchases	75,000		
Drawings	3,560		
Investments	65,500		
Cash in hand	56,000		
Insurance	13,000		
Advertisement	2,000		
Plant & Machinery	18,000		
Buildings	10,000		
Carriage Inwards	800		
	4,81,310		4,81,310

Adjustments: 1) Closing stock was valued at Rs. 35,000.
2) Depreciation on furniture and fixture @ 5%p.a and Plant & Machinery 10% p.a

7. The following are the details relating to two projects:

	Project A Rs.	Project B Rs.
Cost of the Project	1,60,000	2,00,000
Estimated Scrap	16,000	25,000
Estimated Savings:		
Year 1	20,000	40,000
Year 2	30,000	60,000
Year 3	50,000	60,000
Year 4	50,000	60,000
Year 5	40,000	30,000
Year 6	30,000	20,000
Year 7	10,000	---

Calculate Pay-back period and consider which project is better.

8. Distinguish between manual accounting and computerized accounting.

CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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 the basic functional units of a simple computer.
b) Explain the process of multiplication of two floating point numbers with a flow chart.

2. a) List various states of an instruction cycle.
b) Explain various addressing modes.

3. a) What is micro instruction? Give an interpretation of it.
b) Explain the mapping procedure of micro operation to a micro instructor address.

4. a) Explain arithmetic pipe in detail with example.
b) Write about array processors.

5. a) Explain about Virtual Memory in detail.
b) Write about RAID levels.

6. a) Explain about peripheral devices and components in details.
b) Explain about RS 232.

7. Write short notes on
a) Cache Coherence
b) Shared Memory Multiprocessors.

8. Write about Pentium -IV architecture.

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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. a) Obtain the transfer function of a DC servo motor with a field control mode.
b) Determine the signal flow graph for the following system

$$\frac{C(s)}{R(s)} = \frac{2.5(s+3)}{(s+10)^2(s+4)(s-12)}.$$

3. a) What are the test signals that one used?
b) A unity feedback system has $G(s) = \frac{10}{s(s+2)}$; find the generalized error constants and steady state error.

4. a) 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 $G(s) = \frac{6k(s+3)}{(s+1)(5s+6)}$. Find the breakaway point on the real axis. Also find the asymptote centroid. Find the value of K at the breakaway point.

5. By developing Bode plots, comment upon stability of the system given as, $G(s) = \frac{10(s+4)}{(s-1)(s-2)}$.

6. a) Derive the expressions for frequency domain specifications of a prototype second order system.
b) Find the value of K and *a,* to satisfy the following domain specifications of a given system shown in Figure 1. Peak resonance(M_r)=1.04 and Resonant frequency (ω_r)=11.55 rad/s.

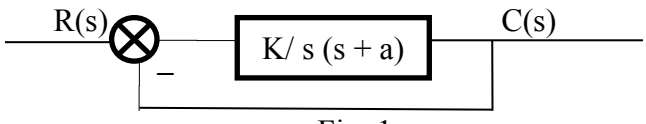


Fig :1

7. a) Discuss about the design aspects of lead compensator using frequency response method
b) Consider the forward path transfer function of a certain unity feedback system $G(s) = \frac{200}{(s+2)(s+10)}$ .The system is to have a phase margin of 500 at a frequency of 10 rad/sec. Design a PI controller.

8. A system is described by state model

$$\dot{x} = Ax + Bu \quad and \quad y = Cx + Du$$

Where

$$A = \begin{pmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -6 & -11 & -6 \end{pmatrix} \quad B = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix} \quad C = \begin{pmatrix} 1 & 0 & 0 \end{pmatrix} \quad D = (0)$$

Determine the output(y) when the system is subjected to unit step input by assuming initial conditions are zero.

CODE No.:10BT50101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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.

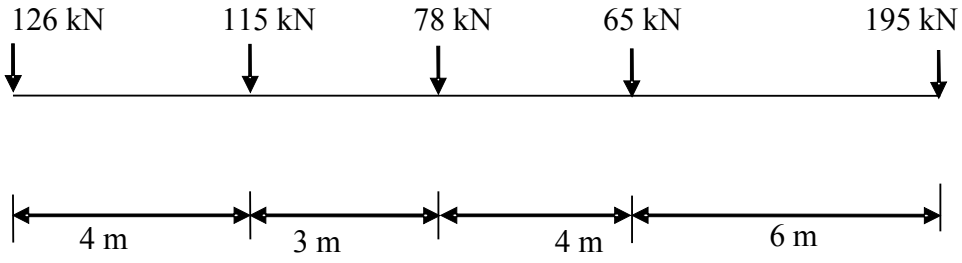


Fig.1

2. a) 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. A continuous beam ABC carries a UDL of 2kN/m over spans AB and 3kN/m over the span BC. Sketch the BMD of the beam. $EI_{AB}=4XEI_{BC}=40000kN.m^2$. End A is fixed. Supports B and C are roller supports. AB=6m, BC=4m. Use Moment distribution method.

4. Analyze the continuous beam shown in Fig. 2 using Slope deflection method. EI is constant. Draw the B.M.D.

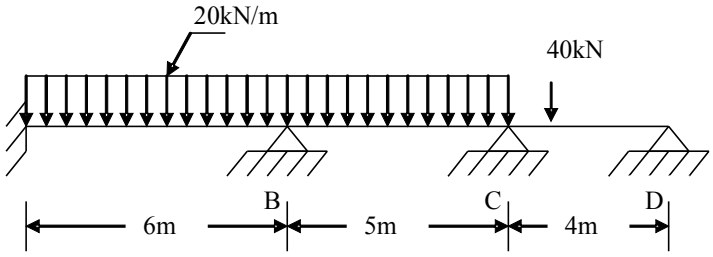


Fig.2

5. Analyze the continuous beam shown in Fig. 3 using Kani's method. EI is constant throughout.

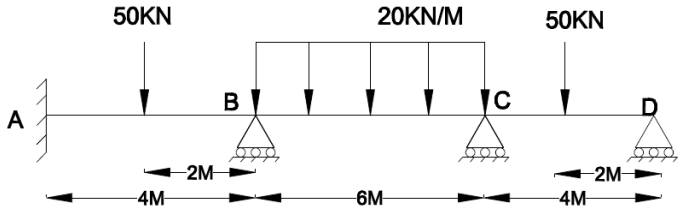


Fig.3

6. Find the vertical and horizontal deflections of the joint E of the truss shown in Fig.4. The sectional area of each member is 1600 mm^2. Take E = 200 kN/mm^2.

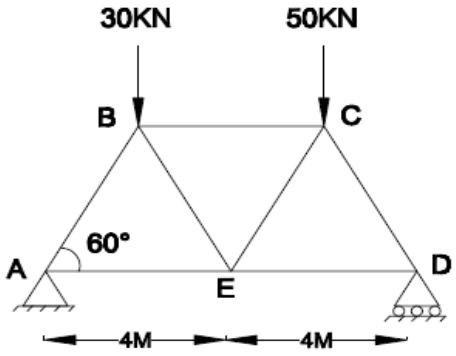


Fig.4

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.

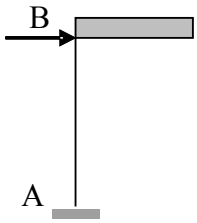


Fig.5

Fig.4

8. a) What do you understand by a substitute frame? How do you select it? Discuss in brief the method of analysis.
b) Explain the cantilever method for analyzing a building frame subjected to horizontal Forces.

CODE No.:10BT50102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

REINFORCED CEMENT CONCRETE STRUCTURES - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the classification of stairs based on the structural behavior.
b) Design the flight of a dog legged stairs to be support on landing beams of width 230 mm and parallel to the stairs. The clear dimensions of stair case are 2.8 m X 5.2 m. Adopt the imposed load as 2.5 kN/m^2. Draw the reinforcement details. Use M 20 grade of concrete and Fe 415 steel.

2. Design a strap footing combined foundation for two columns C and D spaced 6m apart between their centres. Column C is 400m square and supports a service load of 500 kN. Column D is 500mm square and supports a service load of 1200 kN. The safe bearing capacity of soil at site is 200 kN/m^2. Adopt M20 grade concrete and Fe 415 grade steel.

3. A reinforced column 400 mm X 500 mm carrying a factored load of 2500 kN is to be supported by six piles if length 5.5 m. The piles are driven through the soil so as to rest on a hard strata. Using M 20 Grade concrete and Fe 415 steel design the reinforcement in a typical pile and draw the reinforcement details.

4. Design a cantilever retaining wall to retain earth to a height of 4.5m 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 dome over a circular hall of 12 m diameter at the base and 4 m rise. The live load acting on the dome surface is 3.5 kN/m^2. Use M25 and Fe 415 steel.

6. Design a RCC circular tank resting on the ground with flexible base to store 250 X 10^3 liters of water. The depth of the tank is limited to 4 m. Use M 20 grade of concrete and Fe 415 steel.

7. Design a circular beam of diameter 5m supported by six square columns of side 230 mm side. The beam is subjected to uniformly distributed load of 40 KN/m. Use M 20 grade of concrete and Fe 415 steel. Draw the reinforcement details.

8. a) Explain the various types of prestressing.
b) A pre-tensioned beam of rectangular section 230 mm X 300 mm, is prestressed by 12-7 mm wires located 100 mm from the soffit of the beam. The wires are initially tensioned to a stress of 1200 N/mm^2. Estimate the final percentage loss of stress due to elastic deformation, creep, shrinkage and relaxation. Use the following data: Relaxation of steel stress is 80 N/mm^2, creep coefficient is 1.6, residual shrinkage strain is 3 X 10^{-4}, E_s = 210 kN/mm^2 and E_c = 35 kN/mm^2.

CODE No.:10BT50103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

ENGINEERING HYDROLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the hydrologic cycle with a neat sketch. Describe briefly the sources of hydrological data in India.

b) Isohyets due to a storm in a catchment were drawn and the details are tabulated as below:

Isohyets (cm)	Area (Sq.km)
Station - 12.0	30
12.0 - 10.0	140
10.0 - 8.0	80
8.0 - 6.0	180
6.0 - 4.0	20.

Determine the average precipitation due to storm in the catchment.

2. a) Discuss with a neat sketch the construction and working of a tipping bucket type of rain gauge.

b) In a certain river basin , there are four rain gauge stations with normal annual precipitations as 800, 520, 440 and 400 mm respectively. Check whether this number of rain gauges is sufficient to limit the error in the mean value to 12%. If not, suggest a suitable measure to achieve the desired error limit.

3. a) Explain various methods of measurement of stage of river. What factors should be considered in selecting a site for locating a stream gauge station?

b) The year wise values of precipitation in cm at a rain gauge station are given in the following table. Using California method, estimate the value of the precipitation, which has recurrence interval of 5 yrs.

Year :	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Ppt. (cm) :	70	37	69	52	60.2	58.1	44	50	48.7	67.5

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) Sketch a typical hydrograph resulting from an isolated storm and identify the features of the same.

b) Given below are the ordinates of a 4h unit hydrograph of a basin in m^3/s at one hour intervals. 4, 25, 44, 60, 70, 61, 52, 45, 38, 32, 27, 22, 18, 14, 11, 8, 6, 4, 2, 1. What is the area of the basin?

6. a) Explain the method of design flood estimation using the rational method.

b) Write down the two basic differential equations of hydraulic routing method and explain each term.

7. a) Distinguish between
   i) Hydraulic conductivity and intrinsic permeability.
   ii) Specific yield and storage coefficient.
   iii) Darcy velocity and actual velocity
   iv) Transmissivity and storativity.

b) Determine the yield from a 30cm diameter well under a drawdown of 10m in the well, if the radius of influence and hydraulic conductivity are 150m and 5m/day respectively. The aquifer is unconfined with a thickness of 60m.

8. a) Describe various types of tube wells.

b) During a recuperation test, the water in an open well was depressed by pumping by 2.5m and it recuperated 1.8m in 80 minutes. Calculate the yield from a well 4m diameter under a depression head of 3m.

CODE No.:10BT50104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

SOIL MECHANICS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the clay minerals? How does clay adsorb water? Explain.
b) The porosity of a soil is 0.35. If specific gravity = 2.66, calculate
(i) saturated unit weight (ii) saturated moisture content and
(iii) moisture content when moist unit weight - 17.6 kso/m^3.

2. a) Explain with the help of particle size distribution curves for the following types of soils.
i) Well graded ii) Uniformly graded iii) Gap graded
b) Draw a typical plasticity chart used in I.S. Classification system. Show the different soil groups on the chart.

3. a) What are the methods of estimation of capillary raise in soil? What is the range of capillary raise in different soils?
b) Determine the average vertical and horizontal permeability of a soil mass made up of three horizontal strata, each 1m thick, if the coefficient of permeability of three strata are $1x10^{-2}$ cm/s, $3x10^{-2}$ cm/s and $8x10^{-3}$ cm/s.

4. a) A stratified soil deposit consists of two layers. The top layer is 2.5 m thick having a bulk density of 17 kN/m^3 and the bottom layer is 3.5 m thick having a saturated density of 21 kN/m^3. The water table is at a depth of 3.5 m from the surface and the zone of capillary saturation is 1 m above the water table. Draw the diagrams showing the variation of total, neutral and effective stresses.
b) Discuss properties and uses of a flow net.

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) What are the field methods for compacting soils? Discuss the suitability of different methods with respect to the soil type.
b) A proposed embankment fill requires 5000 m^3 of compacted soil. The void ratio of compacted fill is specified as 0.70. Four Barrow area soils are available as described in the following table.

Barrow area	Void ratio	Cost of transportation Rs/m^3
A	0.85	450/-
B	1.20	300/-
C	0.95	350/-
D	0.75	500/-

Make the necessary calculations to select the Barrow area from which the soil should be brought to minimize the cost. Let specific gravity of all four soils equal to 2.70.

7. a) Describe a method to determine the pre-consolidation pressure of soil and explain its significance.

b) In an oedometer test, a clay specimen initially 25 mm thick attains 90% consolidation in 10 minutes. In the field, the clay stratum from which the specimen was obtained has a thickness of 6 m and is sandwiched between two sand layers. A structure constructed on this clay experienced an ultimate settlement of 200 mm. Estimate the settlement at the end of 100 days after construction.

8. a) What are the types of shear strength tests based on drainage condition? Discuss the type of laboratory triaxial shear test you would recommend to be carried out in the following field problems.

i) Short term stability of foundation on saturated clay.
ii) Long term stability of foundation on saturated clay.
iii) Stability of shape of an embankment slope immediately after construction.
iv) Stability of an unlined canal slope during sudden draw down.

b) A cylindrical specimen of a saturated soil fails under an axial stress of 150 kPa is an unconfined compression test. The failure plane makes an angle of 52^0 with the horizontal. Calculate the cohesion and angles of internal friction of the soil.

CODE No.:10BT50201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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 discuss switching characteristics of a thyristor during Turn-On and Turn-Off process.
b) A 100V DC supply is connected to RL load through a thyristor, the latching current of a thyristor is 50mA, and the duration of the firing pulse is 50μs. Will the thyristor gets fired or not. If the load resistance is 20Ω and inductance is 0.5H

2. a) With the help of a neat diagram, explain the two transistor analogy of an SCR.
b) With the help of neat circuit diagram and associated waveforms, explain the operation of Resistance firing circuit.

3. a) List the advantage and disadvantages of one-quadrant converter over two-quadrant converters.
b) Explain the operation of a single-phase half wave converter with RL load and derive the expression for output voltage, current and input power factor.

4. a) Explain the operation of 1-Ø Half -controlled bridge-converter with resistive and inductive loads.
b) A single-phase 230V,1KW heater is connected across 1-Ø 230V,50Hz supply through an SCR. For firing angle delays of 45° and 90°, calculate the power absorbed in the heater element.

5. a) Explain the operation of a 3-ϕ, fully controlled bridge converter with inductive load. Draw the voltage and current waveforms for α=70°. List the firing sequence of SCR's.
b) Derive the expression for average load voltage.

6. a) Discuss the principle of phase control in single phase full wave ac voltage controller. Derive the expression for the rms value of its output voltage.
b) A single-phase half-wave ac voltage controller feeds a load of R=20Ω with an input voltage of 230V, 50Hz. Firing angle of thyristor is 45°. Determine the rms value of output voltage, power delivered to the load.

7. a) Describe a Morgan chopper with associated voltage and current waveforms.
b) With the help of voltage and current waveforms, explain the working of first quadrant chopper.

8. What is pulse width modulation? Describe various PWM techniques with associated waveforms. How do these different from each other?

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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 June - 2013

AC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Obtain the expression for the short pitch factor and distributed winding factor.
b) A 3-phase, 4-pole, star connected alternator has 60 slots with 2 conductors per slot. The pitch of the coil is 3 slots less than pole pitch. The flux per pole is 0.125 Wb. Calculate the no load terminal voltage if the speed of alternator is 1500 rpm.

2. a) Define the following terms
i) Harmonics ii) Armature reaction iii) Leakage reactance
iv) Synchronous reactance v) Synchronous impedance
b) Discuss the load characteristics of an alternator for different load power factors along with phasor diagrams.

3. a) Explain the experimental determination of X_d and X_q by using slip test and also draw the phasor diagram.
b) Write a short note on the ZPF method.

4. a) Explain the effect of change in excitation on an alternator with and without load.
b) Explain the procedure for the determination of $\mathbf{X''_d}$, $\mathbf{X'_d}$ & $\mathbf{X_d}$ in an alternator and draw its equivalent circuits.

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 & synchronous reactance of 0.3Ω and 3.2Ω per phase respectively. Calculate the generated emf per phase for full load with 0.8 p.f leading.

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) What is a universal motor? Draw its phasor diagram and discuss its operation. Bring out the effects of various emf induced in its armature.
b) In a universal motor find out an expression for ratio of speeds when operated on dc and ac.

8. a) Draw a diagram showing the construction of a stepper motor and discuss its operation.
b) In a two-phase, 50HZ, 2-pole servomotor the air gap powers for balanced positive sequence and balanced negative sequence operation at $V_r = V_c$ = 100 V and s = 0.5 are 9.6 W and 6 W respectively. Find the net torque in synchronous watts and N-m if the motors is fed by voltages $V_r = 150 \angle 0^\circ$ V and $V_c = 90 \angle -30^\circ$ and s = 0.5.

CODE No.:10BT50402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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) Find the radiation resistance of a Hertizian dipole of length $\lambda/80$, $\lambda/100$.
b) Prove that the Radiation resistance in a half wave dipole is 73Ω.

3. a) What is pattern multiplication? Illustrate the pattern multiplication with typical example.
b) Derive the expression for Bandwidths of Broad side array and End Fire array.

4. a) Derive the expression for the input impedance of a folded $\lambda/2$ dipole in terms of the input impedance of a center fed $\lambda/2$ dipole. How the input changes if at all, when the unfed limb is of thicker wire than the fed limb?
b) Distinguish between Sectoral, Pyramidal and Conical Horns with neat sketches. List out their utility and applications.

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 15^0 between first nulls at a frequency of 10GHz.

6. a) Explain the principle of operation of Lens antenna.
b) Explain the method of measuring the directivity of the antenna.

7. a) Explain the reasons which cause the fading of radio signals. What steps are taken to overcome this effect?
b) Explain Duct propagation.

8. Write a short notes on
i) MUF
ii) Virtual Height
iii) Wave tilt
iv) Multihop Transmission

CODE No.:10BT50403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the expression of voltage given for a dual input, balanced output differential amplifier.
b) Explain the principle of operation of a current mirror circuit.

2. a) Present IC classifications with respect to the number of components integrated on the same chip.
b) Define the terms input offset voltage, thermal drift, error voltage, noise and CMRR and give their significance in practical circuits.

3. a) Construct a circuit to realize $V=V_1 + V_2 - V_3$ using op amp and prove.
b) Explain how an op amp can be used as an integrator.

4. a) Explain the working of square wave generator by using op-amp.
b) Derive the expression for output frequency of square generator.

5. a) Design a first-order low-pass and a high-pass Butterworth active filters to satisfy the given requirements.
b) Write notes on all-pass filter. Draw the suitable circuit diagram and discuss about phase shift between input and output voltages.

6. a) Draw the circuit diagram and explain the operation of basic log amplifier using transistor.
b) With help of neat diagram with waveforms explain the Full wave precision rectifier circuit.

7. a) Draw and explain the principle of operation of single and dual slope ADCs.
b) Give the standard DAC and ADC specifications with the normal values.

8. a) Draw and explain the circuit diagram of a sample and hold circuit. What type of capacitor should be used in S/H circuits?
b) Write notes on applications of analog switches and multiplexers.

CODE No.:10BT50404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Design a CMOS logic for the $(ab + a\bar{c})$. Draw the logic diagram and function table.
b) Explain why CMOS has become more familiar than N-MOS family with an example.

2. a) What is the necessity of separate interfacing circuit to connect CMOS gate to TTL? Draw the interface circuit and explain the operation.
b) Explain the following terms with reference to TTL gate.
i) Logic levels ii) D.C noise margin
iii) Low state unit loads iv) High state fan out.

3. a) Describe the design flow for the 4-bit Full Adder design.
b) Design a 8-bit Full Adder by making the 4-bit Full Adder as a library function.

4. a) Explain behavioral design elements of VHDL?
b) Explain the following.
i) Test bench ii) Delta cycle iii) Simulation cycle

5. a) Explain the working of 3**:**8 decoder and write VHDL code.
b) Construct 8**:**1 MUX using 4**:**1MUX and a 2**:**1 MUX. Write the VHDL code for this implementation.

6. Explain the operation of Dual parity encoder and write a VHDL code for the corresponding.

7. a) Distinguish between counters and shift registers and explain their operation with Truth tables (of 4-bit each).
b) Design a Decade counter and explain it with a state diagram.

8. a) Explain with a neat sketch the internal structure of a ROM.
b) Differentiate SRAM &DRAM with their properties.

CODE No.:10BT50421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

ELECTROMAGNETIC THEORY

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Find the force on a charge of -100 mC located at P (2, 0, 5) in free space due to another charge 300 μC located at Q (1, 2, 3).
b) State and express Gauss's law in both integral and differential forms.

2. a) Derive Poisson's and Laplace equations.
b) A parallel plate capacitance has 500mm side plates of square shape separated by 10mm distance. A sulphur slab of 6mm thickness with Єr = 4 is kept on the lower plate find the capacitance of the set-up. If a voltage of 100 volts is applied across the capacitor, calculate the voltages at both the regions of the capacitor between the plates.

3. a) Two homogeneous linear media having an interphase at x=0, x<0 describes medium1 and x>0 describes medium2 with μ_{r1}=2,μ_{r2}=5.The magnetic field in medium1 is $\mathbf{150\bar{a}_x - 400\bar{a}_y + 250\bar{a}_z}$ A/m. Determine
i) magnetic field in medium2.
ii) magnetic flux density in medium 1.
iii) magnetic flux density in medium 2.
b) Given points A(1,2,4), B(-2,-1,-3), C(3,1,-2). Let a differential current element with I=6A and |dl|=magnitude of differential current element=0.0001m is located at A. The direction of dl is from A to B. Find dH at C.

4. a) If the electric field strength of an electromagnetic wave in free space is $\bar{E} = 2\cos w\left(t - \frac{z}{v_0}\right)\bar{a}y$ V/m. Find magnetic field.
b) In free space, magnetic field of an electromagnetic wave is $0.4w\in o\cos(wt - 50x)\bar{a}_z$ A/m. Find electric field and displacement current density.

5. a) Derive the expressions for the phase shift constant and attenuation constant of a plane wave propagating in a lossy dielectric medium.
b) A plane wave propagating through a medium with $\boldsymbol{\varepsilon_r}$ = 8, $\boldsymbol{\mu_r}$ = 2 has E = 0.5 $\mathbf{exp(-0.33z)sin(10^8t - \beta z)\ a_x\ V/m}$. Determine wave velocity, wave impedance and the magnetic field intensity.

6. a) For the case of reflection by a perfect dielectric with oblique incidence, explain the two possible polarizations with appropriate sketches and explain the Snells laws.
b) State and prove pointing theorem.

7. a) Explain the natural and man-made EMI sources.
b) Discuss about pulse power Electro-magnetics.

8. Write short notes on
a) Bonding
b) Grounding

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

LINEAR AND DIGITAL IC APPLICATIONS

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the functions of all building blocks of an operational amplifier.
b) Define slew rate and describe a method to improve slew rate.

2. a) Design a monostable multivibrator using an opamp with trigger pulse shaping which will drive a LED ON for 0.5 second each time it is pulsed.
b) Draw and explain the operation of an Op-amp based triangular wave generator.

3. a) What are the modes of operations of IC555? Derive the expression of time delay of a monostable multivibrator.
b) Write the applications of PLL.

4. a) Explain briefly CMOS dynamic electrical characteristics.
b) Draw the circuit of CMOS NOR gate and verify the Boolean function.

5. a) Summarize the difference between TOTEM Pole and Open Collector Output.
b) Design, draw and explain TTL three-state NAND gate operation with its function table.

6. a) Discuss the steps in VHDL design flow.
b) What are the different data objects supported by VHDL? Explain scalar types with suitable examples.

7. a) Design a logic circuit to detect the prime number of a 5-bit input. Write the structural VHDL program for the design.
b) Realize the following expression using 74X151 IC.
$f(X) = \overline{A}BC + A\overline{B}C + AB\overline{C}$

8. a) Design an 8-bit serial-in and parallel-out shift register with flip flops. Explain the operation with the help of timing waveforms.
b) Write VHDL data flow program for the above shift register.

CODE No.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

PRINCIPLES OF COMMUNICATIONS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Find the Fourier transform of
i) $\cos\omega_c t$ ii) $e^{-at}u(t)$
b) Differentiate between Analog and Digital signals.

2. a) Derive the efficiency for AM wave for 100% modulation.
b) Differentiate AM, DSB-SC and SSB-SC.

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 the condition for aliasing? How can you overcome it?
b) Explain about TDM.

5. a) Explain the need for prediction filter in ADPCM.
b) Explain about the uniform quantization & non-uniform quantization.

6. a) Explain DPSK modulator and DPSK demodulator with block diagram.
b) Draw the modulation waveforms for transmitting binary information [1 0 1 1 0] over baseband channels using sinusoidal carrier for the following modulation schemes.
i) ASK ii) FSK

7. a) Explain Shanon-Fano coding with example.
b) State and prove source coding theorem.

8. a) The generator matrix for a (6,3) block code is given by

$$G = \begin{array}{ccc:ccc} 1 & 0 & 0 & 0 & 1 & 1 \\ 0 & 1 & 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 & 1 & 0 \end{array}$$

Obtain all the codewords of this code.
b) What is a convolution code? How is it generated?

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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 do you mean by performance analysis of an algorithm? Explain.
b) Discuss in detail about probabilistic analysis.

2. a) Explain disjoint set operations with example.
b) Explain the algorithm based on DFS for finding strongly connected components of a directed graph G.

3. a) Explain Merge sort algorithm with an example.
b) Explain Quick sort algorithm with an example.

4. a) How the divide and conquer algorithm differ from greedy algorithms? Explain with a simple example.
b) Solve the single source shortest path problem using greedy method.

5. a) Design a dynamic programming algorithm and explain for finding an optimal order of multiplying n matrices.
b) Explain optimal binary search trees with examples.

6. a) Explain the recursive backtracking algorithm.
b) What is graph coloring? Write an algorithm which finds m-coloring of a graph.

7. a) Explain how you solve the Knapsack problem using Branch and Bound.
b) Explain the principles of LIFO Branch and Bound.

8. a) Give properties of P, NP class problems.
b) State and prove Cook's theorem.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

MICRO-PROCESSOR AND INTERFACING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw and explain the flag register of 8086.
b) Explain with suitable examples the following addressing modes supported by the architecture of 8086 and explain how the physical address is calculated.
i) Direct addressing mode ii) Indexed addressing mode
iii) Base register addressing mode iv) Indexed register addressing

2. a) Explain the address modes for control transfer instructions.
b) Write an ALP to find the factorial of given number.

3. a) Explain the function of the individual bits in status register of 8257.
b) Explain the interfacing of DMA controller 8257 to 8086 processor with block diagram.

4. a) Explain the control word format of 8255 in BSR mode.
b) Interface a seven segment display unit to 8086 through port A of 8255. Write a program to display 0 to F with 1 sec delay.

5. a) What is an interrupt vector table? Draw and explain the interrupt vector table of 8086.
b) Describe the response of 8086 to the interrupt coming on INTR pin.

6. a) Explain the working of TXRDY and RXRDY signals in 8251 USART.
b) Draw and discuss the status word format of 8251.

7. a) Distinguish between the RISC and CISC processors.
b) Explain the features of Pentium processors.

8. a) Discuss any four major differences between a micro processor and a microcontroller.
b) Describe the following registers of 8051 micro controller.
i) A ii) B iii) SP iv) DPTR

CODE No.:10BT50503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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) Briefly explain the Levels of Abstraction in a Database Management System.
b) Explain the different roles of database administrators, application programmers, and end users of a database.

2. a) Draw the ER-diagram to design a system for a Publishing Company that produces scientific books on various subjects. The books are written by authors who specialize in one particular subject. The company employs editors who not necessarily being specialists in a particular area, each take sole responsibility for editing one or more publications. A publication covers essentially one of the specialist subjects and is normally written by a single author. When writing a particular book, each author works with editor, but may submit another work for publication to be supervised by other editors. To improve their competitiveness, the company tries to employ a variety of authors, more than one author being a specialist in a particular subject.
b) Write short notes on the following:
i) Relationship-set ii) Many-to-many relationship

3. Consider the following relations containing airline flight information:
Flights(flno:integer, from:string,to:string,distance:integer, departs:time, arrives:time);
Aircraft(aid:integer, aname:string, cruisingrange:integer)
Certified(eid:integer,aid:integer)
Employees(eid:integer,ename:string,salary:integer)
a) Write the relational algebraic expression for the following
i) Find the names of employees whose salary is more than 50000
ii) Find the names of pilots certified for some Boeing aircraft
iii) Find the flno of flights from Bombay to Madras
iv) Find the eid of employee registered but not piloting any air craft
b) Explain the cross product, natural join and division.

4. a) Write short notes on nested queries.
b) Describe about complex integrity constraints in SQL.

5. a) Explain the Boyce- Codd normal form with an example.
b) Describe the various properties of decompositions.

6. a) Describe about recoverability in detail.
b) Write short notes on transaction definition in SQL.

7. a) Explain in detail how the deadlocks are handled.
b) Write short notes on remote backup systems.

8. Mention the purpose of indexing. How this can be done by B+ tree? Explain.

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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) What is a system call?
b) Explain the operating system structure with a neat diagram.

2. a) What are schedulers?
b) Explain following scheduling algorithms with the help of examples along with their advantages & disadvantages:
i) First Come First Served (FCFS) ii) Shortest Job First (SJF)
iii) Priority Scheduling iv) Round Robin Scheduling

3. What is dining-philosophers problem? Devise an algorithm to solve this problem.

4. a) What are the methods for handling deadlocks?
b) Define deadlock prevention.
c) Explain about the methods used to prevent deadlocks.

5. a) What is Belady's anomaly? Give an example for illustration.
b) What is virtual memory? How can it be implemented?

6. a) How free space is managed using bit vector implementation.
b) Explain different free space management techniques.

7. a) What is meant by RAID levels?
b) Write about the kernel I/O subsystem.

8. a) Describe the goals of protection in Operating system .
b) What is the role of Access Matrix?
c) Discuss the levels of security measures for protecting the system.

CODE No.:10BT51001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

PROCESS CONTROL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the characteristics and mathematical model of a liquid system.
b) Discuss in detail about (i) Process variables (ii) Degree of freedom.

2. a) The reset controller is used to control the first order process $G_p(s) = K_p /(\tau s+1)$. Show the effect of controller on the offset of process output.
b) Suggest and explain the scheme to ensure the bumpless transfer in auto to manual mode transfer.

3. a) What are the advantages of the force type pneumatic controllers? Describe with neat diagrams, the working of a force type pneumatic proportional controller.
b) Explain the working principle of a hydraulic proportional controller. How proportional gain can be adjusted in this controller?

4. a) Explain in detail about IAE, ISE, ITAE evaluation criteria.
b) Discuss continuous oscillation method for control loop tuning.

5. a) Draw a neat figure of pneumatic actuator with a positioner and explain. List its advantages.
b) With neat sketch explain about the I/P converter.

6. a) Briefly explain valve sizing.
b) A fully open valve passes 200gpm of water at a pressure differential of 10.0psi calculate valve sizing.

7. a) How would you determine the type of process that would require a cascade control and the type that require feed forward control?
b) What are basic differences between the cascade and feed forward control.

8. a) Draw the schematic diagram of distillation column with its condenser and reboiler. And show the various control loops required to control the process.
b) Write short notes on shell and tube heat exchanger.

CODE No.:10BT51002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

INDUSTRIAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain how the area is measured using trapezoidal method.
b) With a suitable diagram explain how the displacement is measured using optical sensors.

2. a) Explain measurement of velocity using Electromagnetic transducer.
b) Discuss digital methods of measuring torque.

3. a) Describe different sources of error in U-tube manometer and explain how corrections can be applied to minimize these errors.
b) Discuss in detail about Thermal Conductivity Gauge with a neat diagram.

4. a) With a neat sketch, explain the principle and working of Laser Doppler Velocimeter.
b) Write short notes on Positive Displacement type Flow Meters.

5. a) Define viscosity. Explain how to measure viscosity using a capillary.
b) Write short notes on pressure head type and displacer type densitometer.

6. a) Design a ON-OFF controller for temperature range of 30ºC-150ºC. Assume current through RTD as 25mA.Bridge is balanced at 30ºC.
b) Explain the principle, operation and application of Optical Pyrometers.

7. a) Design a bubbler type system for level measurement of tank height 10 m. The signal conditioning circuit required to give an output at 2 m is -5V, 6 m is +5 V and pressure to current converter of 4-20 mA. The density of the liquid is 0.85 gm/cc.
b) Explain the principle and working of Ultrasonic and Float gauge type level measurement.

8. a) Explain the principle and operation of measuring Humidity and Sound level meter.
b) Explain the principle, operation and application of Gyroscope.

CODE No.:10BT51201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

SOFTWARE ENGINEERING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List out the principles that guide framework activity.
b) What are different software myths and how they are clarified? Explain.

2. a) What is prototyping? With neat diagram explain prototyping model.
b) Explain about the phases involved in unified process.

3. a) Explain about different types of behavioral models.
b) Briefly discuss about requirements management.

4. a) What are the quality guidelines required during design process? Explain.
b) What is software architecture? Why is architecture important? Explain.

5. Consider an "IVRS" based voting system in which the voting process is based on the "Interactive Voice Response System" (IVRS). Define the Features, Usecases and also the Traceability Matrix with Features against Usecases for the "Interactive Voice Response System".

6. a) What is the difference between an error and a defect? Why can't we just wait until testing to find and correct all software errors? Justify.
b) Discuss about boundary value analysis.

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. a) Distinguish between process metrics and project metrics.
b) What is an indirect measure and why they are needed in software metrics?

CODE No.:10BT51202 **SVEC10-RA**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

COMPUTER GRAPHICS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) How Computer graphics is used in CAD of architecture, mechanical and aeronautical?
b) Explain the functionalities of CRT device with the help of a diagram?

2. a) Explain window-to-viewport mapping?
b) Write a call back routine to draw rectangles entered with mouse?

3. a) Explain the steps involved in rotating an object about an arbitrary point in 2-D graphics.
b) Derive the transformation matrix for reflecting a point p (5, 10) about the line $y = x + 1$. Explain the intermediate steps.

4. a) Mention the input devices that are available for data input on graphic workstations. Explain in detail.
b) Clarify the area filling technique with algorithm with proper illustrations.

5. a) Give explanation Bezier curves & surfaces with relevant examples.
b) Confer about the design of graphic package in detail.

6. a) Develop transformation matrix for 2-D viewing transformation in explain in brief.
b) Explain how category of a line is find out for its visibility using region codes in Cohen-Sutherland line clipping algorithm.

7. a) How visibility surfaces of a polyhedron is determined using BSP tree method? Explain.
b) Explain area subdivision and octree methods.

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.:10BT51202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

COMPUTER GRAPHICS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) How Computer graphics is used in CAD of architecture, mechanical and aeronautical?
b) Explain the functionalities of CRT device with the help of a diagram?

2. a) Explain window-to-viewport mapping?
b) Write a call back routine to draw rectangles entered with mouse?

3. a) Explain the steps involved in rotating an object about an arbitrary point in 2-D graphics.
b) Derive the transformation matrix for reflecting a point p (5, 10) about the line $y = x + 1$. Explain the intermediate steps.

4. a) Mention the input devices that are available for data input on graphic workstations. Explain in detail.
b) Clarify the area filling technique with algorithm with proper illustrations.

5. a) Give explanation Bezier curves & surfaces with relevant examples.
b) Confer about the design of graphic package in detail.

6. a) Develop transformation matrix for 2-D viewing transformation in explain in brief.
b) Explain how category of a line is find out for its visibility using region codes in Cohen-Sutherland line clipping algorithm.

7. a) How visibility surfaces of a polyhedron is determined using BSP tree method? Explain.
b) Explain area subdivision and octree methods.

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.:10BT51301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

ADVANCED CONTROL SYSTEMS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Convert the following system matrix to canonical form: $A = \begin{bmatrix} 1 & 2 & 1 \\ -1 & 0 & 2 \\ 1 & 3 & -1 \end{bmatrix}$

2. Examine the observability of the given system

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \\ \dot{x}_3 \end{bmatrix} = \begin{bmatrix} 0 & 1 & 1 \\ 0 & 1 & 1 \\ 0 & -2 & -3 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} u \quad \textit{and} \quad y = [3 \quad 4 \quad 1] \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}$$

3. a) Explain various types of non-linearities exist in physical systems and their effects on the performance.
b) Derive the equation for the describing function N for the hysteresis nonlinearity.

4. Consider a non-linear system of equations

$\dot{x}_1 = 2x_1 + x_1x_2$

$\dot{x}_2 = 2x_2 + x_1x_2$

There are two equilibrium points: $x = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$ and $x = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$

Determine the stability of the origin.

5. a) Describe the instability theorems of Lyapunov.
b) What are the sufficient conditions of stability of non-linear autonomous system?

6. Consider the system described by

$$\dot{x} = \begin{bmatrix} 0 & 1 \\ -1 & -2 \end{bmatrix} x + \begin{bmatrix} 1 \\ 1 \end{bmatrix} u \; ; \; y = [1 \quad 0]\, x$$

Design a state observer so that the estimation error will decay in less than 4 sec.

7. Describe the minimization of functions in the optimal control system design.

8. Consider a system described by the equations

$\dot{x} = f(x) + F(x)u(t)$

Where f(x) and the n X p matrix F(x) may be the nonlinear. Use Minimum Principle to show that it is necessary to use a Bang-Bang controller to obtain the minimum-time response for this system if the input variables $u_i(t)$; i =1,2,3, … , p are constrained to a magnitude of less than a constant M.

CODE No.:10BT51302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

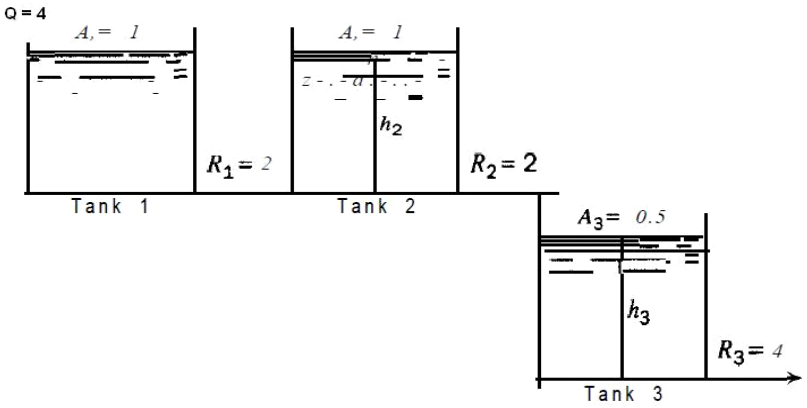
PROCESS CONTROL

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain continuous process with an example
b) Obtain mathematical model of given system. For a step change in q (ie. Q = 1/S), determine $H_3(0)$, $H_3(\infty)$ and plot $H_3(t)$.



2. a) Briefly explain the discontinuous control mode with a suitable example.
b) Define tuning of a controller. Discuss in detail about Cohen-Coon tuning method.

3. a) A temperature transducer with a time constant of 0.4 seconds and a static sensitivity of 0.05 mv/^{o}C is used to measure the temperature of a hot liquid medium which changes from 25^{o}C to 65^{o}C. The transducer is adjusted to read zero at 25^{o}C.
i) Determine the time taken to read 80% of final value if the temperature changes as a step
ii) Calculate the reading of the transducer at the end of 4 seconds if the temperature changes at a constant rate of 10^{o}C per second from 25^{o}C to 65^{o}C
b) Explain the working principle of hotwire anemometer.

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) Explain in detail about cascade control configuration with suitable example.
b) Explain (i) Electro pneumatic actuators (ii) control valve sizing

6. a) Explain in detail about Heat exchangers.
b) Explain in detail about combustion control of fuel and air.

7. a) Discuss in detail about stability of exothermic reactors.
b) Explain (i) chemical equilibrium (ii) reaction rate.

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 **SVEC-10 (RA)**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

SYSTEM SOFTWARE

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the SIC machine architecture in detail.

2. a) What is meant by conditional jump instruction? Explain with an example.
b) List bit Shift and Rotate instructions. Explain.

3. Explain all different functions used in BIOS INT 10H for graphics and text processing.

4. a) Write short notes on macro directives.
b) How can you pass an argument to the macros? Explain.

5. Draw the flowchart or state the algorithm of Pass-I of the assembler and explain it.

6. Distinguish between one pass and multi pass assemblers.

7. Given the following program:

```
            START    300
ID1         DS       5
L1          MOVER    AREG, D
            ADD      AREG, C
            SUB      AREG, ID2
            MOVEM    AREG, ID1
D           EQU      ID2
L2          PRINT    D
            ORIGIN   ID1-1
C           DC       '9'
            ORIGIN   L2+1
            STOP
ID2         DC       '13'
            END      L1
```

Show the contents of symbol table and intermediate code at the end of Pass-I.

8. Write a short note on:
i) Various features that a basic text editor should posses.
ii) Interactive debugging systems

CODE No.:10BT51501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

SYSTEM SOFTWARE

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain different addressing modes with example.

2. a) Explain JMP instruction with an example.
b) Assume that DX contains binary 10111001 10111001. Determine the binary contents of DX after execution of the following instructions:
i) SHL DL,1 ii) SHL DX,2 iii) SHR DX,1
iv) ROR DX,3 v) ROR DL,3

3. a) Write short notes on table processing.
b) What is S/W interrupt? Explain the services of DOS interrupt 21H.

4. a) How can you define code segment as a public? Explain.
b) Write short notes on the following directives:
i) Local ii) Purge iii) Conditional

5. Write briefly about the machine independent Macro processor features.

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.:10BT52303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

BASIC INDUSTRIAL AND ENVIRONMENTAL BIOTECHNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain in detail the industrial production of Citric acid with the help of a flow chart.

2. Discuss in detail the production process of steroids.

3. Write short notes on
   a) Pectinase
   b) Lipases

4. Write in detail about the recombinant Insulin production and its therapeutic applications.

5. Write briefly on:
   a) Xanthan Gum and applications
   b) High -Fructose corn syrup.

6. Explain how the Fluidized Bed Reactor (FBR) useful in waste water treatment.

7. Explain the liquid phase Bioremediation.

8. Discuss in detail about biological detoxification with suitable example.

CODE No.:10BT52305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

BIOCHEMICAL REACTION ENGINEERING

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1.
a) For a gas reaction at 400k the rate is reported as $\frac{dp_A}{dt} = 3.66\ P_A^2$ atm hr
   i) What are the units of the rate constant?
   ii) What is the value of the rate for this reaction if the rate equation is expressed as - $r_A = \frac{1}{V}\frac{dN_A}{dt} = KC_A^2 mol/m^3.S$?

b) Explain the concept of reaction order and molecularity.

c) At 1100k n-nonane thermally cracks (breaks down into smaller molecular) 20 times as rapidly as at 1000 k. Find the activation energy for this decomposition.

2. The aqueous reaction, A → R + S proceeds as follows.

Time, min	0	36	65	100	160	∞
C_A, mol/L	0.1823	0.1453	0.1216	0.1025	0.0795	0.0494

With C_{AO}=0.1823 mol/L, C_{RO}=0.0 and C_{SO}= 5 mol/L. Find the rate equation for this reaction.

3. Depict the steady state Plug Flow Reactor and derive the performance equation for PFR.

4.
a) Explain about mixed flow reactors in series and parallel.

b) A liquid reactant stream (1 mol /liter) passes through two mixed flow reactors in series. The concentration of A in the exit of the first reactor is 0.5 mol/liter. Find the concentration in the exit stream of the second reactor. The reaction in second order with respect to A and V_2/V_1=2.

5. Give a detailed account of the models for growth inhibition kinetics.

6. Consider the parallel decomposition of A, C_{A_0}= 2.

A → R $r_R = 1$
A → S $r_S = 2C_A$ ..... desired
A → T $r_T = C_A^2$

Find the maximum expected Cs for isothermal operations
a) in a Mixed Flow Reactor b) in a Plug Flow Reactor

7. We want to produce R from A is a batch reactor with a run time no greater than 2 hours and at a temperature somewhere between 5 and 90°C. The kinetics of this liquid first order reaction system is as follows:

$$A \xrightarrow{1} R \xrightarrow[2]{} S \begin{cases} K_1 = 30e^{-20000/RT} K = [\min^{-1}] \\ K_2 = 1.9e^{-15000/RT} R = 8.314 J/mol.K \end{cases}$$

Determine the optimum temperature to give $C_{R\,max}$ and run time to use and the corresponding conversion of A to R.

8. What is equilibrium constant and what is its significance? Discuss the effect of temperature on equilibrium constant.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

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) Write the properties of transition functions and prove that if **$\delta(q,x)= \delta(q,y)$** then **$\delta(q,xz) = \delta(q,yz)$** for all strings **Z** in $\sum^+$.
b) Give the definitions of finite automaton and non deterministic finite automaton.

2. a) Construct a mealy machine can output EVEN, ODD according as the total number of 1's encountered is even or odd. The input symbols are 0 and 1.
b) Write the applications of the finite automata with output.

3. a) Prove that Regular Sets are close under Union, Concatenation, Kleene Closure.
b) Explain Context free grammar and construct a CFG to generate set of palindromes over alphabet {a, b}.

4. a) Construct NFA for the following Grammar
i) S→Aa/Bb , A→Aa/a , B→Bb/b ii) S→A0/B1 , A→A0/0 , B→B1/1
b) Check whether the given grammar is Ambiguous or not and derive "aabbabbaba"
S→ASA/ASB/BAS/A/B
A→AS/SA/a/aS
B→b/BS/SB/bS

5. a) Construct Push Down Automata to recognize the Language **$L = \{WW^R / W \text{ in } \{0,1\}\}$**.
b) Formally define acceptance of Push Down Automata by empty stack and final state.

6. a) Design a pushdown automata which accepts **$L=\{ ww^r \mid w \in (a+b)^*\}$**.
b) With a neat diagram show the working of a push down automata and define language accepted by a pushdown automata.

7. a) Design Turing Machine for Proper Subtraction i.e., **m-n** is defined to be **m-n** for **m>n**, where **n** and **m** are positive integers, zero for **m<n**.
b) Explain modifications & techniques of Turing Machine.

8. a) Write the properties of LR(K) grammar.
b) Write short notes on post correspondence problem. Explain how it can be used to prove the problems are decidable or not.

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2013

COMPUTER NETWORKS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain OSI Reference Model.

2. Explain about Guided Transmission media.

3. a) Explain sliding window protocol with neat diagram.
b) List out the functions of Data link protocol.

4. Differentiate Pure ALOHA and Slotted ALOHA with efficiency calculations.

5. a) What are the techniques for broadcasting? How the duplicate packets are eliminated.
b) Give the format of IPv4 addresses.
c) Why classless addressing is introduced?

6. a) Explain the comparisons of UDP over TCP.
b) List out the properties of transport layer.

7. Explain about Electronic Mail.

8. a) Distinguish between 802.11b and 802.16a.
b) Differentiate between 3G and 4G networks.

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

OPTIMIZATION TECHNIQUES

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Differentiate between
i) Constraint space and composite constraint space.
ii) Design variables and pre-assigned parameters.
iii) Bound point and a free point in the design space.
iv) Linear programming and Non-linear programming.

2. Maximize $f = 8x_1+4x_2+x_1x_2 -x_1^2 - x_2^2$
subject to $2x_1 + 3x_2 \le 24$
$-5x_1 + 12x_2 \le 24$
$x_2 \le 5$ by applying Kuhn-Tucker conditions.

3. Use big-M method to
Minimize $Z = 2x_1 + x_2$
Subject to the constraints: $3x_1 + x_2 = 3$
$4x_1 + 3x_2 \ge 6$
$x_1 + 2x_2 \le 3$
$x_1, x_2 \ge 0.$

4. Use Branch-and-Bound technique to solve the following problem.
Max $Z = 7x_1 + 9x_2$
subject to the constraints $-x_1 + 3x_2 \le 6$
$7x_1 + x_2 \le 35$
$x_1 \ge 0, x_2 \le 7$

5. Find the minimum value of the function $f = \lambda^5 - 5\lambda^3 + 20\lambda + 5$ using the Dichotomous search method in the interval (0, 5) with $\delta = 0.0001$.

6. Minimize the function $f(x) = x_1 - x_2 + 2x_1^2 + 2x_1x_2 + x_2^2$ starting from the point $X_1 = \begin{Bmatrix} 0 \\ 0 \end{Bmatrix}$ using Powell's method.

7. Use the K - T conditions to find the optimal solution to the following NLPP.
Minimize $Z = (x_1 - 3)^2 + (x_2 - 5)^2$
Subject to $x_1 + x_2 \le 7$
$x_1 x_2 \ge 0$

8. Solve the following LP problem by dynamic programming
Maximize $f(x_1,x_2) = 10x_1 + 8x_2$
Subject to
$2x_1 + x_2 \le 25$
$3x_1 + 2x_2 \le 45$
$x_2 \le 10$
$x_1 \ge 0, x2 \ge 0$

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CODE No.:10BT4HS01 **SVEC-10 (RA)**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. What is demand analysis? Explain the determinants of demand.

2. What are economies of scale? Explain different types of internal and external economies of scale.

3. Illustrate graphically how the price and output are determined under monopolistic competition.

4. What are the characteristic features of business firms in the 21st century?

5. What do you mean by Book - Keeping and also state the differences between Book-Keeping and Accounting.

6. Prepare Trading, Profit and Loss Account of M/s Nath & Nath Limited, Tirupati for the year ended 31st December 2012 and a Balance sheet as on that date from the following Trial balance:

Particulars	Debit Rs.	Credit Rs.
Share Capital		2, 50,000
Debtors & Creditors	40,000	45,000
Bills payable		15,000
Purchases & Sales	1, 25,000	7, 50,000
Stock on 1-1-12	50,000	
Wages	48,000	
Coal	5,000	
Salaries	35,000	
Rent rates	2,000	
Stationary	500	
Travelers Commission	4,000	
Transport	1,000	
Advertisement	3,000	
Depreciation	76,500	
Plant machinery	3, 50,000	
Furniture	1, 00,000	
Investments	1, 75,000	
Cash in hand	20,000	
Cash at bank	25,000	
Total	**10, 60,000**	**10, 60,000**

Note: Closing Stock on 31.12.2012 is Rs.1,25,000

7. What is the importance of Capital Budgeting? Explain the basic steps involved in evaluating Capital Budgeting proposals.

8. What do you mean by computerized Accounting? Briefly explain its merits and limitations.

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

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

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

Answer any FIVE questions
All questions carry equal marks

1. What is demand analysis? Explain the determinants of demand.

2. What are economies of scale? Explain different types of internal and external economies of scale.

3. Illustrate graphically how the price and output are determined under monopolistic competition.

4. What are the characteristic features of business firms in the 21st century?

5. What do you mean by Book - Keeping and also state the differences between Book-Keeping and Accounting.

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Particulars	Debit Rs.	Credit Rs.
Share Capital		2, 50,000
Debtors & Creditors	40,000	45,000
Bills payable		15,000
Purchases & Sales	1, 25,000	7, 50,000
Stock on 1-1-12	50,000	
Wages	48,000	
Coal	5,000	
Salaries	35,000	
Rent rates	2,000	
Stationary	500	
Travelers Commission	4,000	
Transport	1,000	
Advertisement	3,000	
Depreciation	76,500	
Plant machinery	3, 50,000	
Furniture	1, 00,000	
Investments	1, 75,000	
Cash in hand	20,000	
Cash at bank	25,000	
Total	**10, 60,000**	**10, 60,000**

Note: Closing Stock on 31.12.2012 is Rs.1,25,000

7. What is the importance of Capital Budgeting? Explain the basic steps involved in evaluating Capital Budgeting proposals.

8. What do you mean by computerized Accounting? Briefly explain its merits and limitations.

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

MANAGEMENT SCIENCE

[Electronics and Communication Engineering, Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. What is SWOT analysis? Illustrate it with business example.

2. a) What is the necessity of a good organization?
b) Explain any two types of organizations stating its advantages and limitations.

3. List and explain the steps of method study.

4. a) The following information is about a group of items. Classify the items as A, B and C.

Item no	501	502	503	504	505	506	507	8	9	10
Annual use	30000	280000	3000	110000	4000	220000	15000	80000	60000	8000
Price	10	15	10	5	5	10	5	5	15	10

b) State the functions of marketing manager.

5. Discuss the functions of HRM.

6. a) Define the terms total float and free float.
b) A project has the following time schedule:

Activity	Time in months	Activity	Time in months
1-2	2	4-6	3
1-3	2	5-8	1
1-4	1	6-9	5
2-5	4	7-8	4
3-6	8	8-9	3
3-7	5		

Construct PERT network and compute: i) Total float for each activity ii) Critical path and its duration. Also find the minimum number of cranes the project must have for its activities 2-5, 3-7 and 8-9 without delaying the project.

7. a) What are the factors that promote entrepreneurship?
b) What are the functions of an entrepreneur?

8. a) Explain various involved in value chain analysis.
b) What is Business Process Outsourcing (BPO)? Explain its salient features.

CODE No.:10BT40503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

PRINCIPLES OF PROGRAMMING LANGUAGES

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the influences on Language design?
b) Explain the deferent concepts of programming languages.

2. a) Explain the implementation details of user-defined types.
b) Discuss in detail about type checking, strong typing, and type compatibility.

3. a) Should an optimizing compiler for C or C++ be allowed to change the order of sub expressions in a Boolean expression? Why or why not?
b) What common programming language borrows part of its designdrom Dijkstra's guarde commands? Explain the approach used with Dijkstra's selector statement with the help of flowchart.

4. a) Write a prolog program to arrange a set of elements in ascending order.
b) What is meant by backtracking? How is it applicable in Prolog?

5. a) Explain the object oriented concepts.
b) Discuss about semaphores, monitors and message passing.

6. a) Define Exception, Exception handler, Raising an Exception, Disabling an Exception, Continuation and Built in Exception.
b) In what way are the list-processing capabilities of scheme and Prolog different? Explain.

7. a) What do you mean by functional programming language? Explain fundamentals of FPL and LISP.
b) Discuss about Database Query Language.

8. a) What is mean by Module Library? Explain ML with respect to any two scripting languages.
b) Explain exceptions and exception propagation considering a suitable programming language.

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

LINEAR AND DIGITAL IC APPLICATIONS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List out the AC characteristics of an op-amp and discuss about them.
b) With neat circuit diagrams explain the techniques used for minimizing offset voltage and offset current.

2. a) 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) Explain the operation of Schmitt trigger using 555 timer with its circuit diagram.
b) Describe how frequency division and multiplication can be achieved using a Phase Locked Loop.

4. a) Draw the circuit diagram of basic CMOS gate and explain the operation.
b) Explain the effect of floating inputs on CMOS gates.

5. a) Give the comparison between TTL, CMOS and ECL families.
b) Design TTL three state NAND gate and explain the operation with the help of function table.

6. a) With examples explain the VHDL design flow and program structure.
b) What are the functions and procedures of VHDL?

7. a) Draw the 74x138, 3 to 8 decoder logic diagram, logic symbol and its truth table. Explain its operation.
b) Write a VHDL model for a 74x181 ALU.

8. a) Write down truth table, VHDL Code for the ***n*** bit register with parallel load. Also draw the circuit and output waveform.
b) What are the impediments involved in the method of synchronous system design?

CODE No.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

PRINCIPLES OF COMMUNICATIONS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With a neat block diagram, explain an Electrical Communication System.
b) Explain the properties of the Fourier transform.

2. a) Explain the generation of DSBSC.
b) Determine the percentage power saving when the carrier wave and one of the sidebands are suppressed in an AM wave modulated to a depth of
i) 100% and ii) 50%

3. a) With the help of block diagram, explain generation of FM wave using Armstrong method.
b) Draw the spectrum of WBFM and explain the effect of modulation index on the spectrum.

4. a) Explain the concept of TDM with an example. Give one application of it.
b) Discuss about the operation of PWM circuit with suitable sketches.

5. a) With suitable block diagram, explain the principle of operation of ADPCM digital scheme.
b) In a delta modulation system, voice signal is sampled at a rate of 64 kHz similar to PCM. The maximum signal amplitude is normalized to unity. Determine the granular noise power if the voice bandwidth is 3.4 kHz. Assuming that the voice signal amplitude is uniformly distributed in the range (-1, 1), determine SNR and minimum transmission bandwidth.

6. a) Sketch the QPSK waveform for the sequences 1101010010, assuming the carrier frequency to be equal to the bit rate.
b) Compare the bandwidth of QPSK system with that of BPSK system.

7. a) Derive an expression for entropy function for binary memory less source.
b) A discrete memory less source has an alphabet of seven symbols whose probabilities of occurrence are as described here

Symbol	S_0	S_1	S_2	S_3	S_4	S_5	S_6
Probability	0.25	0.25	0.125	0.125	0.125	0.0625	0.0625

Compute the Huffman code of this source.

8. a) Give an account of error detecting and correcting capabilities of block codes.
b) The generator polynomial of (15, 11) Hamming code is defined by $g(x) = 1+x+x^4$. Develop the encoder and syndrome calculator for this code.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

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 meant by analysis of algorithms? What are the two types of analysis? Explain.
b) Show that $2n^2 2^n + n \log n = \theta (n^2 2^n)$ is correct.
c) What is Omega (Ω) notation? Explain.
d) Imagine that you have a recursive program whose run time is described by the following recurrence relation :

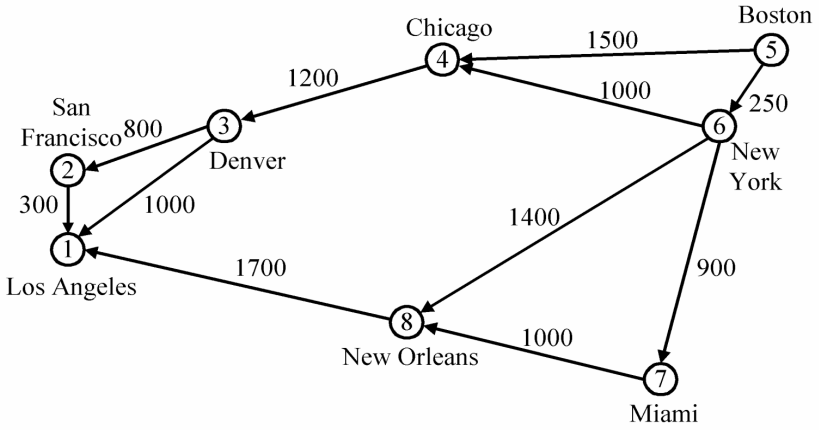
$$T(n) = \begin{cases} 1 & , n = 1 \\ 2.T\left(\frac{n}{2}\right) + 4.n & , n > 1 \end{cases}$$

Solve the relation with iterated substitution and use your solution to determine a tight big-oh bound.

2. a) Discuss graph traversal techniques with suitable examples. Also give merits and demerits of those techniques.
b) Prove that two biconnected components can have at most one vertex in common and that vertex is an articulation point.

3. a) Write and explain Quick sort algorithm.
b) Explain the procedure to derive and solve the time complexity of Quick sort algorithm.

4. Consider the Digraph given in the following figure. Find shortest paths from vertex 5 to other vertices. Explain each step in detail.



5. a) Explain Dijkstra's shortest path algorithm with an example graph.
b) Write a short note on NP-Hard Scheduling Problems.

6. a) Write a recursive backtracking algorithm to solve sum of subset problem.
b) Discuss Graph coloring problem and its time complexity.

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) Differentiate between Eulerian Graph and Hamiltonian Graph.
b) Explain with code and example: Binary Search.

CODE No.:10BT50504 SVEC-10 (RA)

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

OPERATING SYSTEMS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is a system call?
b) Explain the operating system structure with a neat diagram.

2. Explain the process life cycle with neat diagram. Describe the typical elements of process control block with diagram.

3. a) Define the structure for critical section.
b) What is critical section problem.
c) Explain two process solutions and multiple process solutions.

4. Is the deadlock preventable? Justify your answer with example and diagram.

5. Given memory partitions of 100KB, 500KB, 200Kb,300KB, and 600 Kb in order how would each of the first-fit, best-fit and worst-fit algorithms place processes of 212KB, 417 KB, 112 KB and 426 KB in order. Which algorithm makes the most efficient? use of memory.

6. Compare the file system structure in Unix with Windows Operating system.

7. a) Write short notes on DMA.
b) Write a note on transforming I/O to hardware operations.

8. What is Domain protection? Explain how domain protection is done in UNIX and MULTICS

CODE No.:10BT51202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

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 working principle of CRT with neat diagram.
b) With the help of a diagram, explain the architecture of Raster displays.

2. a) Explain Midpoint circle algorithm. Given a circle radius r = 10, demonstrate the Midpoint circle algorithm by determining positions along the circle octant in the first quadrant from x = 10 to x = y.
b) Explain DDA line drawing algorithm between points (a, b) and (c, d).

3. a) Explain briefly the general 2-D composite transformations and their computational efficiency.
b) Write routines for applying translation, rotation and scaling parameters to reposition and resize two-dimensional objects.

4. a) Write a procedure to implement Sutherland Hodgeman polygon clipping algorithm.
b) Derive the 2-D window-to-viewport coordinate transformation equations.

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) Give the 3D homogeneous coordinate transformation that rotates a point about the line

$x(t) = 0$
$y(t) = t$
$z(t) = t$

by degrees. Leave matrices in factored form. (Hint: draw a picture of the line)
b) The following questions refer to the projection of 3D points onto the view plane given by x = -10. Assume that the up vector is (0, 1, 0).Given an arbitrary point (x,y,z) what is the corresponding 2D projected point on the view plane using a parallel projection (the direction of projection is (1,0,0)).

7. a) Explain the method used to determine object visibility by painting surfaces onto the screen from back to front.
b) Develop a routine to implement the scan-line algorithm for displaying the visible surfaces.

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.:10BT51501 SVEC-10 (RA)

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

SYSTEM SOFTWARE

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the function of segment and explain various categories of segments.
   b) Distinguish between an .exe and a .COM program.

2. Explain about LOOP and a conditional jump instruction with examples.

3. a) Explain arithmetic micro operations with examples.
   b) Describe the features of the following functions for INT 21 H keyboard input:
   i) 01 H ii) 07 H iii) 08 H iv) 0A H

4. a) How can you define code segment as a public? Explain.
   b) Write short notes on the following directives:
   i) Local ii) Purge iii) Conditional

5. Draw the flowchart or state the algorithm of PASS-I of the assembler and explain it.

6. Distinguish between one pass and multi pass assemblers.

7. a) Describe machine dependent loader features in detail.
   b) Explain the following in detail:
   i) Linkage Editor
   ii) Dynamic Linking
   iii) Bootstrap Loaders.

8. Write a short note on:
   i) Various features that a basic text editor should posses.
   ii) Interactive debugging systems

CODE No.:10BT60101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

ESTIMATION AND QUANTITY SURVEYING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the different methods of approximate estimates?
b) A person purchase a plot of land and constructs a building of plinth area 100sqm on their plot of land. The construction cost Rs. 88000/-. The height of the building up to top of floor is 3.40m. A parapet wall of height equal to 80cm is constructed on the terrace. Work out cost per sqm. and cum of the building. If a similar building of plinth area equal to 140sqm is to be constructed in near by locality what would be its approximate cost of construction.

2. Estimate the quantities of the building items of a hexagonal room from the given plan and section as shown in Fig (1)
a) Earthwork in excavation in foundation.
b) I-Class brick work in foundation and plinth.
c) I-Class brick work in super structure.
d) 12mm thick cement plastering in CM (1:6) in walls.

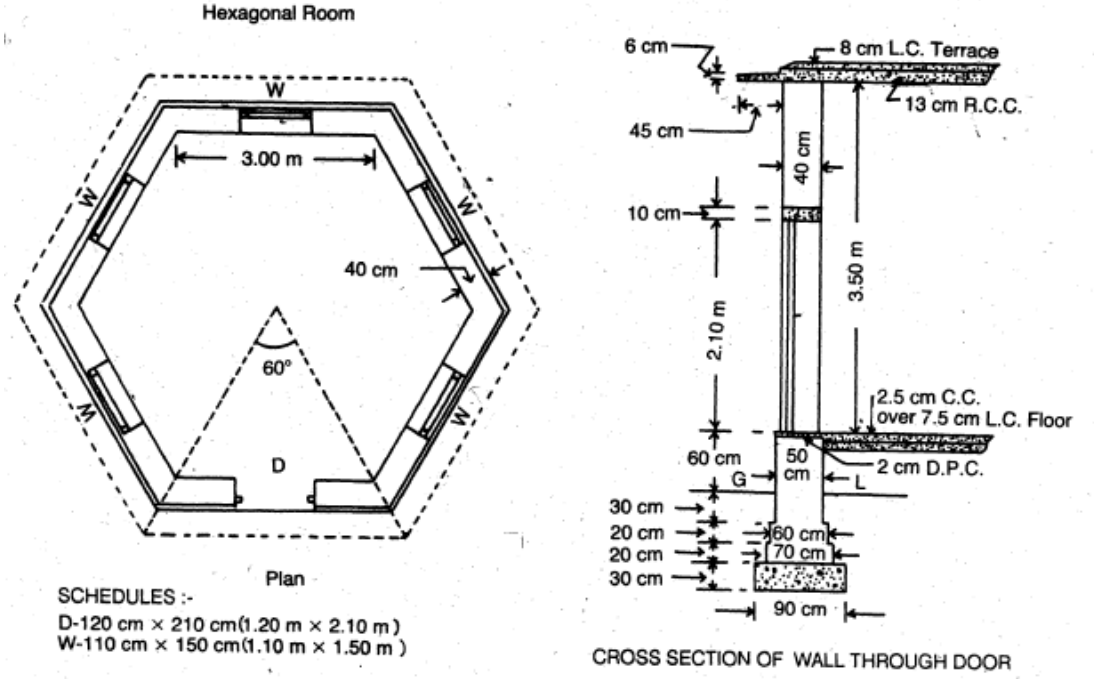


Fig (1)

3. Reduced level (RL) of ground along the centre line of a proposed road from chainage 10 to chainage 20 are given below. The formation level at the 1015 chainage to I'm 100 downward. Formation width of road is 10m and side slopes of banking are 2:1 (H:V) length of chain in 30mt. Estimate the quantity of earth work at the rate of Rs. 275/100 cum.

Chainage	10	11	12	13	14	15	16	17	18	19	20
RL of ground	105.0	105.6	105.44	105.9	105.42	104.3	105.0	104.1	104.62	104.00	103.3
RL of formation	107										
Gradient	DG 1 in 150					DG 1 in 100					

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. Given a column and its footing as shown in Fig.(2) work out the quantity of steel in footing and column only.

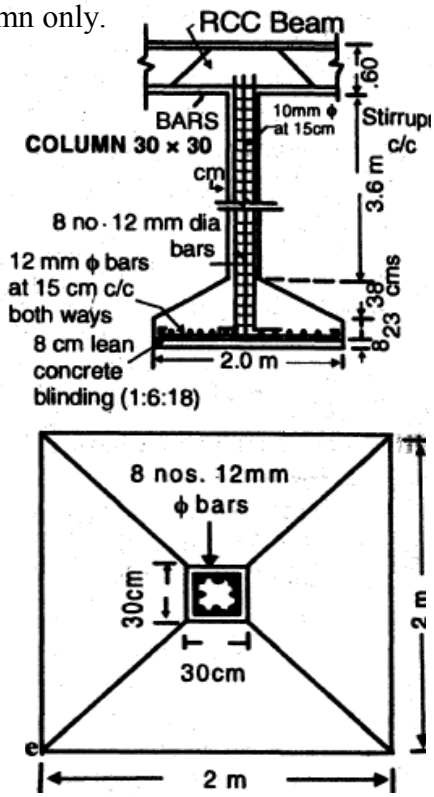


Fig.(2)

6. What do you mean by valuation and explain various purposes of valuation.

7. Explain the following briefly
   a) Sinking fund
   b) Scrap and salvage value
   c) Capitalize value
   d) Depreciation

8. Explain the following methods of estimating the buildings:
   a) Bay method
   b) Cost comparison method
   c) Cost from materials and labour method.

CODE No.:10BT60102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

STEEL STRUCTURES - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between working stress method of design and limit state design.
b) Explain the following:
i) Design requirements ii) Various limit states.

2. a) What are the advantages of High Strength Friction Grip bolts?
b) A groove weld is to connect two plates 180 mm X 18 mm each. Determine the design bending strength of the joint, if it is subjected to a moment of 10 kN.m. Also, determine the adequacy of the joint if the shear force at the joint is 280 kN. Assume the welds to be of double-U shop welded. The grade of steel is Fe 410.

3. a) Explain the different types of welds used in practice.
b) A tie member of a roof truss consists of two angles ISA 150 X 115 X 10 mm. The angles are connected to either side of a 12 mm thick gusset plate and the member is subjected to a factored tensile force of 600 kN. Design the welded connection assuming that the connections are made in the workshop.

4. Design a single angle to carry tension of 120 kN. Thickness of gusset plate can be considered as 12 mm.

5. Design a simply supported beam of 5 m span. The beam is subjected to two concentrated loads of magnitude P acting at a distance of 1 m from either support and a central concentrated load of magnitude P. A udl of 3 kN/m is acting on the entire span. The value of P = 30kN for the dead load and 15 kN as imposed load. The beam ends are restrained against torsion with compression flange free to rotate in plan. The compression flange is unrestrained between the supports.

6. Determine the load carrying capacity of column of section ISHB 250 and length 3.9 m. The one end of the column is hinged and the other end is fixed. Adopt the following material properties f_y = 250 N/mm^2, fu = 420 N/mm^2 and $E = 2\times 10^5$ N/mm^2.

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. A column, section ISHB 400, is subjected to an axial factored load of 2500 kN. The column is to be supported on M 20 grade concrete pedestal. Design the gusset base.

CODE No.:10BT60103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

WATER RESOURCES ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the factors affecting the choice of the method of irrigation.
b) What are the benefits that can be accrued from Irrigation projects?

2. a) 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) Explain Khosla's method of independent variables.
b) Describe briefly with neat sketches the various types of weirs.

4. a) Explain with a neat sketch the zones of storage of a reservoir.
b) Classify various types of dams. Distinguish clearly between rigid and non-rigid dams.

5. a) Discuss in brief various modes of failure of a gravity dam.
b) Derive an expression for the limiting height of a low gravity dam.

6. a) What are the different types of earth dams that are usually adopted? State where each type is adopted.
b) What are the causes of failures of earth dam? Also, explain remedial measures.

7. a) How falls are classified?
b) What do you understand by a head regulator? State functions of a distributory head regulator and a cross regulator.

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) Regular Examinations May - 2013

ENVIRONMENTAL ENGINEERING - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Enumerate various components of water supply scheme and explain briefly.
b) What is the necessity of protected water supply to the communities?

2. a) What are the types of water demand? Explain the factors affecting water demand.
b) The census data of population of a town is as follows. Estimate the population in the year 2021 using any two methods of population forecasting.

Year	:	1951	1961	1971	1981	1991	2001
Population	:	23000	28500	34700	41600	49200	56800

3. a) Estimate the population of a town in 2001 by arithmetic increase and geometric increase methods. Use the senses data given below.

1941	1951	1961	1971	1981	1991
350,000	466,000	994,000	1,560,000	1,623,000	1,839,000

b) What is Per capita demand? Explain the factors influencing per capita demand.

4. a) Define water pollution. What are the sources of water pollution in both urban and rural environment?
b) What is turbidity? Describe the methods of measuring turbidity of a water sample in the laboratory.

5. a) Draw the conventional water treatment flow diagram and the usefulness of each unit in the treatment of water
b) Derive an equation to compute the terminal velocity of a discrete particle that is setting in a clarifier (Stoke's law).

6. a) Design a rapid sand filter for the treatment of water required for a population of 60,000 in a town. The rate of water supply is 180 liters per person per day. The filters are rated to work at 3000 liters per hour per m^2. Assume any other data if necessary suitably. (Need not design the under water drainage system)
b) What is the mechanism involved in the disinfection process for killing the pathogenic bacteria?

7. a) When do you recommend softening as one of the units in drinking water treatment plants? Describe clearly the lime-soda process of softening.
b) What do you mean by disinfection and explain two methods of disinfection for water treatment.

8. Briefly discuss the design principles involved the design of water supply network to be laid in a multi storied buildings.

CODE No.:10BT60105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

TRANSPORTATION ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the policies and objectives of Lucknow Road Plan.
b) List out the types of drawings to be prepared in a typical highway project.
c) Explain about the road network patterns with help of sketches.

2. a) What is sight distance? What are the different types of sight distance?
b) The radius of a horizontal curve is 112m. The design speed is 55kmph and the design coefficient of lateral friction is 0.15, calculate the super elevation required if full lateral friction is assumed to develop. Also calculate the coefficient of friction if no super elevation is provided?

3. a) Describe briefly about desirable properties of road aggregates.
b) Marshal method of bitumen mix design. Discuss

4. a) Discuss the effects of repeated applications of loads on pavements. Explain equivalent wheel load factors for load repetitions.
b) Find the radius of relative stiffness and equivalent radius of resisting section for a concrete slab from the following data. Modulus of elasticity of concrete = 3.1×10^5 kg/cm^2; Poisson's ratio of concrete = 0.15; Modulus of subgrade reaction = 6.0 kg/cm^2; Thickness of concrete slab = 22 cm; Radius of loaded area = 16 cm.

5. Describe in detail the design of surface drainage system with all the design steps.

6. a) What are the requirements of an ideal permanent way?
b) Explain the necessity of sleepers in railway track. What are the desirable qualities of good sleepers?

7. a) Transit curves are provided on both sides of a circular curve on railway, justify.
b) Determine the length of transition curve for BG track of 4^0 having a cant of 8cm. Maximum permissible speed on the curve is 75kmph.
c) Write notes on various gradients used in Indian railway.

8. a) Explain about the geometric standards required for the design of airport.
b) Write notes on runway lighting system & marking.

CODE No.:10BT60106

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

FOUNDATION ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

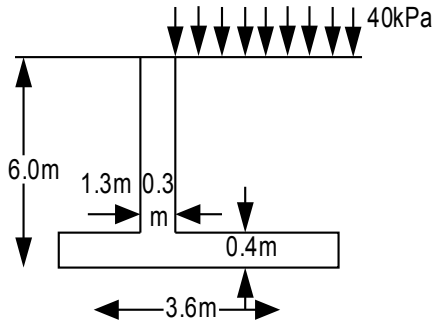
1. a) Describe open excavation methods of exploration. What are their advantages and Disadvantages?

b) Explain and discuss the various factors that help to decide the number and depth of bore holes required for subsoil exploration.

2. a) Explain the Culmann's graphical method of determination of active earth pressure.

b) A smooth backed vertical wall is 6.3m high and retains a soil with a bulk unit weight of 18kN/m^3 and $\phi = 18°$. The top of the soil is level with the top of the wall and is horizontal. If the soil surface carries a uniformly distributed load of 45 kN/m^2, determine the total active thrust on the wall per lineal metre of the wall and its point of application.

3. a) Examine the stability of a R.C.C. cantilever retaining wall as detailed in the figure with respect to sliding and overturning. The relevant properties are γ_e = 24.0 kN/m^3, γ of soil = 17 kN/m^3, ϕ=38° and C = 0.



b) Derive an expression for design depth of penetrating of a cantilever retaining wall penetrating cohesionless Soil.

4. a) A canal 6m deep, runs through a soil having the following characteristics. C_u = 18kPa, $\phi_x = 10°$, γ_{sht} = 20 kN/m^3. The angle of slope of banks (β) is 45°. Determine the factor of safety with respect to cohesion whom the canal is full upto the top of Banks (let $F_\phi = 1.0$) what will be the factor of safety in the case of sudden draw down ? stability numbers are given in the following table.

β	Stability Numbers, Sn			
	$\phi = 0°$	$\phi = 5°$	$\phi = 10°$	$\phi = 15°$
60°	0.191	0.162	0.138	0.116
45°	0.170	0.136	0.108	0.083
30°	0.156	0.110	0.075	0.046

b) Explain the stability analysis of finite slopes by fellenius method of slices.

5. a) Discuss the various types of foundations and their selection with respect to different situations.

b) A strip footing 1.5 m wide is supported on soil with its base at a depth of 1.2 m below ground surface. The soil properties are as under: $\mathbf{c}' = 20$ kN/m^2, $\mathbf{Ø}' = 20^0$, $\gamma_t = 18$ kN/m^3 and $\gamma' = 10$ kN/m^3. Determine the net ultimate bearing capacity and the safe bearing capacity using Terzaghi's equation for General shear failure, when water table is at the level of the base of the footing. Take factor of safety = 2.5. For $Ø' = 20^0$, assume $N_c = 15$, $N_q = 6.4$, and $N_\gamma = 5.4$.

6. The following observations relate to a plate load test conducted on a 30cm square test plate placed at a depth of 1.5m in a soil deposit.

Intensity of load(kg/cm^2)	0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Settlement (mm)	0	2	4	7	11	16	23	32	45

Plot the load-settlement curve and determine the allowable bearing pressure for a 2m square footing for a minimum factor safety 2.5 with respect to shear failure and a maximum permissible settlement 25mm. water table is at a depth of 2m below ground surface. What will be the actual factor of safety with respect to shear failure and maximum permissible settlement.

7. a) What is the basis on which the dynamic formulae are derived? Mention two well known dynamic formulae and explain the symbols involved.

b) A group of 16 piles of 50cm diameter is arranged with a centre to centre spacing of 1.0m. The piles are 9m long and are embedded in soft clay with an unconfined compressive strength of 60kPa. Determine the ultimate load capacity of the pile group. Let adhesion factor = 0.60.

8. a) Explain the procedure adopted in well sinking and bring out problem that are encountered in open sinking.

b) What are the components of a well foundation? Discuss briefly the function and design of each component.

CODE No.:10BT60201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

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) Write the advantages and disadvantages of electric drive.
b) A 220 V D.C series motor runs at 700 rpm when operating at is full load current of 20 A. The motor resistance is 0.5 ohms and the magnetic circuit can be unsaturated. What will be the speed if
i) the load torque is increased by 44% ii) the motor current is 10A.

2. a) What is dielectric heating? List out the applications of dielectric heating.
b) A 100 Kg of tin is to smelt in one hour in a smelting furnace. Determine the suitable rating of furnace if smelting temperature of tin is 235°C; specific heat is 0.055, latent heat of liquidification 13.3K cal/Kg. Take initial temperature of metal as 35°C.

3. a) Explain about different types of resistance welding.
b) Write about equipment used for the electric welding.

4. a) Define Horizontal portal curve and Vertical polar curve.
b) Describe inverse square law.

5. a) Compare a tungsten filament lamp with fluorescent tube.
b) Discuss about flood lighting in detail.

6. a) Write various types of traction systems.
b) Explain different methods of electric braking applied to three-phase induction motor.

7. a) Explain crest speed, average speed and scheduled speed of an electric train.
b) A locomotive accelerates a 350 tonne train up a gradient of 1 in 100 at 0.8km/hr/sec. Assuming the coefficient of adhesion to be 0.25, determine the minimum adhesive weight of the locomotive. Assume train resistance 40 newtons/tonne and allow 10% for the effect of rotational inertia.

8. a) Explain about energy auditing.
b) Explain about different characteristics of energy efficient motors.

CODE No.:10BT60202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

POWER SEMICONDUCTOR DRIVES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Draw and Explain Speed-torque characteristics of single phase full converter feeding a D.C Series motor.

2. a) Write short notes on rheostatic braking for separately excited dc motor with neat diagrams.
b) A 230 V, 960 rpm and 200 A separately excited DC motor has an armature resistance of 0.02Ω. The motor is fed from a chopper, which is capable of providing both motoring and braking operations. The source has a voltage of 230V. Assuming continuous conduction, calculate the time ratio of chopper for the motoring action at rated torque and 350 rpm.

3. a) Discuss in detail counter current and dynamic braking operations of D.C. shunt motors.
b) A 400V, 750 rpm, 70A dc shunt motor has an armature resistance of 0.3Ω when running under rated conditions, the motor is to be braked by plugging with armature current limited to 90A. What external resistance should be connected in series with the armature? Calculate the initial braking torque and its value when the speed has fallen to 300 rpm.

4. a) With the help of neat circuit diagram and waveforms explain the operation of four -quadrant, chopper fed dc series motor for continuous current operation.
b) A 230 V ,1750 rpm , 74 A dc motor has an armature resistance of 0.180Ω & is driven with its armature supplied from class A chopper & a 240V dc Source , given rated operation on 230V. The chopping frequency is constant at 500 Hz. If the average armature current is equal to the rated value & T_{on} is at the setting that gives the largest harmonic content, Determine
i) the motor speed ii) the rms armature current.

5. a) Why the stator voltage control is an inefficient speed control method?
b) The rotor resistance and stand still reactance referred to status of a 3-Φ, 4 pole squirrel cage induction motor is 0.2Ω and 0.8Ω per phase respectively. The full load slip of the motor is 4%. Neglect stator resistance and leakage reactance. Determine how much voltage should be reduced in order to get a speed 1200 rpm in the load torque remains constant.

6. a) With the help of power circuit explain briefly about static rotor resistance control of induction motor.
b) Explain the operation of static scherbius drive.

7. With suitable circuit diagrams discuss in detail the principle of operation of Self controlled Synchronous motor drive employing a Cycloconverter.

8. Explain the following in detail
a) Photovoltaic panels.
b) Solar powered pump drives.
c) Solar powered Electrical vehicles and boats.

CODE No.:10BT60401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

DIGITAL SIGNAL PROCESSING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is a causal system? Give an example.
b) Compute the convolution of the following signals
i) $x(n) = \{\underset{\uparrow}{1}, 0, 2, 5, 4\}$, $h(n) = (\underset{\uparrow}{1}, -1, 1, -1\}$
ii) $h(n) = \{\underset{\uparrow}{1}, 0, 1\}$, $x(n) = \{1, -2, -2, 3, 4)$

2. a) Determine the IDFT of X(k)={3,2+j,1,2-j}
b) Determine the DFT of the sequence

$$x(n) = \begin{cases} \frac{1}{4} & for\ \ 0 \le n \le 2 \\ 0 & otherwise \end{cases}$$

3. a) Determine the 4 point IDFT of {2.5,-0.25+j0.75, 0,-0.25-j0.75} using DIFFT Algorithm.
b) Draw the radix-2 FFT-DIF butterfly diagram and radix-2 FFT-DIT butter formation fly diagram.

4. a) Derive the relation between Z transform and DFS
b) Realize the system y(n) = y(n-1) + 2y(n-2) + x(n) using direct form II realization.

5. Design butterworth filter using bilinear transformation method for the following specifications

$0.8 \le |H(e^{j\omega})| \le 1; \quad 0 \le \omega \le 0.2\pi$
$|H(e^{j\omega})| \le 0.2; \quad 0.6 \le \omega \le \pi$

6. a) Compare the rectangular window and hamming window.
b) What is an FIR filter? Compare an FIR filter with an IIR filter.

7. Explain about polyphase structure of decimator.

8. Write short notes on:
i) Trans multiplexer ii) Signal compression

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CODE No.:10BT60402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the different elements of digital communication system with the help of neat block schematic diagram.
b) Explain the requirement of sampling of signal prior to transmission through digital communication system, also explain the conditions for sampling rate to sample a signal for reconstruction.

2. a) Explain DM scheme. How does DM differ from DPCM scheme?
b) Message signal to DM is $m(t)=0.1t^2-5t+2$ step size is 1 volt and sampling frequency is 10Hz. Sketch the message signal and output of DM over a time interval of **0** to **2** sec.

3. a) Describe the modulation and demodulation in a binary phase shift keying system (with neat diagrams).
b) Compare the ASK, PSK and FSK modulation schemes.

4. a) Prove that S/N ratio of a matched filter in optimum.
b) Derive an expression for baud rate in PSK and FSK systems.

5. a) Explain the concept of information and derive its various properties.
b) A discrete memory less source emits messages from the set of size M=4 at the rate of **r** = 2000 symbols/sec. The symbol probabilities are 1/2 , 1/4, 1/8, 1/8.
Find i) the information contained in each message.
ii) average information per symbol and
iii) information rate.

6. a) Describe the Huffman Coding method with an example.
b) Calculate the channel capacity of a low pass, Gaussian, white channel with a bandwidth of 3KHz and S/N_0 =3 where S is the signal power and N_0 is the one sided power spectral density of noise at the output of the 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) List and explain merits and demerits of convolution codes.
b) Write about
i) State diagram ii) Tree diagram

CODE No.:10BT60403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

MICROWAVE ENGINEERING

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the expressions for the fields in rectangular waveguide in case of Transverse Magnetic (TM) wave.
b) Consider a rectangular waveguide with a/b = 2, a = 2.29 cm, μr = 1 and εr = 2.5. Find out the cutoff wavelength, cutoff frequency for TE10, TM11 mode.

2. a) Why micro-strip transmission line is preferred over any other type of transmission line? Show that Q of micro-strip line increase with frequency.
b) Determine the average power transmitted through a rectangular wave guide in TEmn mode.

3. a) Explain the working principle of a H - Plane Tee junction with neat diagram.
b) What is the difference between magic tee and magic ring? Explain.
c) A 100 w power source is connected to the input of a directional coupler with coupling factor = 20 dB, Directivity = 60 dB and an insertion loss of 0.8 dB. Find the output power at the through, coupled and isolated ports. Assume all ports to be matched.

4. a) Explain Unitary property of S - Matrix.
b) Derive the S - matrix of an ideal E - plane Tee.

5. a) With the applegate diagram, describe the mechanism of operation of two cavity Klystron amplifier. Write the assumptions on which the analysis for RF amplification by this amplifier is based.
b) What is reflex Klystron? What are its important applications?

6. a) What is a slow wave structure? Explain and differentiate between different structures.
b) Explain the working principle of 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) What are the different methods used in measuring Impedance at microwave frequency? Discuss in detail.
b) Explain the different methods involved in measuring VSWR.

CODE No.:10BT60404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

MICROPROCESSORS AND MICROCONTROLLERS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss various types of addressing modes in 8085.
b) Write logical steps to add the following two Hex numbers. Both the numbers should be saved for future use. Save the sum in the accumulator. Numbers: A2H and 18 H.

2. a) Write an 8086 program to add two 16 bit numbers in CX and DX and store the result in location 0500H addressed by DI.
b) Explain the purpose of MN / MX Pin.

3. a) Explain the different types of assembler directives.
b) Write an 8086 assembly language program and algorithm for converting a BCD number to its equivalent Hexa - decimal number.

4. Explain the significance and the interfacing of 8255 with a processor.

5. Describe 8251 USART and interfacing with 8086 processor with neat diagrams.

6. Draw the block diagram of DMA controller and explain its operations.

7. a) Discuss the internal RAM organization of 8051 microcontroller.
b) State any 10 instructions from the instruction set of 8051 microcontroller.

8. Explain the Timer/Counter functional unit of microcontroller 8051 with relevant Diagrams.

CODE No.:10BT60405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

VLSI DESIGN

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about MOS, CMOS, BiCMOS features.
b) Explain the processing steps in the fabrication of N-Well CMOS technology with neat sketches.

2. a) Explain the operation of NMOS, PMOS Pass transistors and transmission gate.
b) Explain the operation of BICMOS inverter.

3. a) Define the various scaling factors for MOS device parameters.
b) Explain the encoding scheme for a simple single metal nMOS process with various MOS layers.

4. a) Explain the sheet resistance and layer capacitance for MOS transistor and inverter.
b) Discuss about wiring capacitances and choice of layers.

5. a) What is meant by subsystem design? Write notes on static RAM.
b) Discuss on one- transistor dynamic memory cell with its circuit, stick diagram and mask layout.

6. a) Explain the methods of programming of PAL CMOS device.
b) Draw and explain the architecture of an FPGA.

7. a) Illustrate the process of synthesis with an example.
b) Describe various VLSI design capture tools.

8. a) Describe the various design strategies used for CMOS testing.
b) What is meant by CMOS testing? Explain the need for testing.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

THEORY OF COMPUTATION

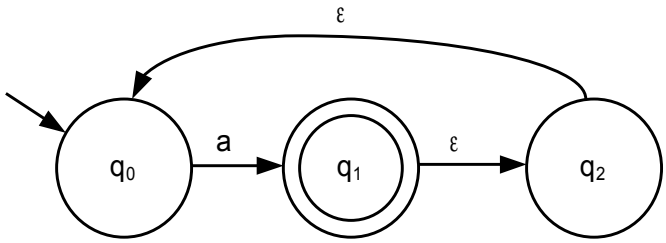
[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define finite automaton and write about any two applications of FA.
b) Design a deterministic finite automata accepting the language that accepts the set of all strings with three consecutive 0's over the alphabet {0, 1}.

2. a) Convert the following NFA with ε-transition to NFA without ε-transitions.



b) Differentiate Moore and Mealy machines.

3. a) Generate the regular expression for the CFL given below
$S \rightarrow aS / bS / a / b$
Generate the automata for the above grammar and write the language that is accepted by the above automata? Do both the derived automata and the given CFG generate same language?
b) Prove that the Closure properties of regular sets are closed.

4. a) Give the context - free grammar for the following language
i) $L = \{a^n b^{2n} / n > 1\}$ ii) $L = \{a^m b^n / n > m\}$
b) Show that the grammar $S \rightarrow SaSaS/b$ is ambiguous.

5. a) Give the Chomsky normal form for the following grammar.
$E \rightarrow E + T / T$
$T \rightarrow T * F / F$
$F \rightarrow (E) / a$
b) State and prove pumping lemma for CFL.

6. a) Design PDA for the language $L = \{W C W^R / W E \{a,b\}^*\}$.
b) Construct PDA equivalent to following grammar.
$S \rightarrow a A A$
$A \rightarrow aS / bS / a$

7. a) What is unrestricted grammar? Give an Example.
b) Explain the language generated by unrestricted grammar.
c) Write about the machine corresponding to unrestricted grammar.

8. a) Discuss about P and NP class of problems.
b) Explain about universal tuning machine.

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CODE No.:10BT60502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

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) Is UNIX operating system multitasking or multithreading? Justify your answer.
b) What is a kernel? Briefly describe UNIX kernel.

2. a) What are various text processing utilities in UNIX text editor. Explain various options supported for text editing with sample examples for each.
b) Explain cat, grep, egrep and fgrep commands with examples.

3. a) List and describe the UNIX redirection operators.
b) Briefly describe shell commands and command execution.

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) 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. a) What is a file? Compare and contrast locking files *vs* locking regions.
b) What is memory? With a sample program demonstrate the usage of calloc, malloc and realloc.

7. a) What is a pipe? How are FIFO's different from Pipes? Explain with suitable example.
b) Write a program to lock a file and record using semaphore.

8. a) Explain briefly value - result arguments.
b) Explain briefly getsockname and getpeername functions.

CODE No.:10BT60503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

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) In the context of data preprocessing, discuss in detail with examples whenever necessary, data transformation.
b) In the context of data preprocessing, discuss in detail with examples whenever necessary, data reduction.

2. a) Define the term Data Mining. Explain the architecture of Data Mining System.
b) Explain the major issues in Data Mining.

3. a) Briefly discuss about Data integration.
b) Describe in brief about Discretization and Concept hierarchy generation.

4. a) Explain about Data Mining Multi level Association rules.
b) Explain how mining will be done in frequent item sets.

5. a) How does the classifier Accuracy will be estimated?
b) Explain about classification by decision tree induction. How the attribute selection will be done to select the root node in decision tree?

6. a) How dissimilarity is calculated among the objects which are Binary variables?
b) Explain the categorization of major clustering algorithms.

7. a) Explain the Methodologies for Stream Data Processing and Stream Data Systems.
b) Explain about Hoeffding Tree Algorithm.

8. a) Explain how do you Perform similarity search in multimedia data?
b) Explain clearly about Text Mining.

CODE No.:10BT60504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

DISTRIBUTED COMPUTING

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is distributed computing? Discuss the key characteristics distributed systems.
b) Write about cooperative computing.

2. a) Differentiate between event diagram and sequence diagram.
b) Explain about deadlocks and timeouts.

3. Briefly explain the following distributed objects paradigms
i) Object space paradigm ii) Mobile Agent paradigm
iii) Network Services paradigm iv) Group paradigm

4. a) Explain the stream mode socket API.
b) Give the issues of client server paradigm.

5. a) Write about reliable and unreliable multicasting.
b) Explain about RPC and RMI.

6. a) How client callback is used in RMI.
b) Write short notes on the following
i) HTML ii) XML iii) MIME

7. a) Discuss the SOAP model.
b) What are ready-made web services?

8. a) What are mobile agents? Explain the architecture of mobile agents.
b) Write about Network services.

CODE No.:10BT61001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

OPTOELECTRONIC & LASER INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about step index and graded index fibers.
b) Explain about linear and non linear scattering losses.

2. a) Explain in detail the structure and operating characteristics of light sources.
b) Explain in detail about source coupling with necessary diagrams.

3. a) With a neat diagram explain in detail about measurement of liquid level using fiber optic sensors.
b) Explain in detail about fiber optic gyroscope with a neat diagram.

4. a) Establish the relation how gain is essential to sustain lasing condition and discuss the necessary lasing condition for a solid state laser.
b) Find the spectral output (no of modes) of an AlGaAs laser supported by the gain spectrum which has a band width of 6 nm. The laser has a cavity length of 200 μm and the emission wavelength is 800 nm. (Assume Refractive index of AlGaAs is 3.65).

5. Explain the following
i) Laser heating ii) Laser welding iii) Laser melting

6. Explain how laser instruments are useful for the following applications
i) Plastic Surgery ii) Oncology iii) Removing tumors

7. a) Discuss the principle involved with the Double exposure Holography for stress analysis.
b) Compare and contrast Time average holography with double exposure Holography.

8. a) Explain the mechanism of magneto optic modulator.
b) Explain the mechanism of Raman - Nath modulator.

CODE No.:10BT61002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

BIOMEDICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the energy limitations in physiological measurement techniques?
b) Describe the working of cardiovascular system with a neat diagram.

2. a) What are bio electric potentials? List the frequency and voltage ranges of ECG, EEG, EMG and ERG signals.
b) What is meant by central nervous system? Explain the different parts of nervous system and their activity.

3. a) Draw the electrical equivalent circuit of a micro electrode and explain its working principle.
b) Discuss about electrical equivalent circuit of a electrode- electrolyte interface and discuss about the interpretation of each element.

4. a) With a neat sketch, give interpretation of ECG waveform.
b) Discuss about blood flow and heart sound measurement.

5. a) Explain the electrode placement for EMG.
b) Give the interpretation of EEG and EMG.

6. a) Differentiate between internal and external pacemakers.
b) With a neat schematic diagram, explain the microwave diathermy.

7. a) Explain about spirometry.
b) Discuss about ventilators.

8. a) Explain the principle and working of CT scanning system.
b) Compare ultrasonic diagnosis with X-ray diagnosis.

CODE No.:10BT61201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the principles of modeling? Explain them in detail.
b) Explain the role of object oriented modeling in design.

2. a) Explain in detail common modeling techniques.
b) How to model relationships with simple dependencies, Single inheritance and Structural relationships? Explain.

3. a) Write notes on Implementation diagrams.
b) Discuss about USDP Phases.

4. a) Write notes on Interaction Sequence diagrams.
b) Depict the Sequence diagram that specifies the interaction between different objects involved in order to copy a file from floppy disk to hard disk.

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) What is a signal? List and explain the different types of events.
b) What are the different parts that are present in transitions? Explain them in detail.

7. a) Explain, how to model the client / server system and embedded system.
b) What is a node? Explain the different types of nodes. What relation exists between nodes and components?

8. a) What do you mean by Usecase realization? Explain.
b) Write notes on package diagrams and Statechart diagrams.

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

COMPUTER NETWORKS

[Information Technology, Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the functionalities of different layers in OSI reference model.
b) Write short notes on Novell networks.

2. a) What is coaxial cable? Explain different types of coaxial cable.
b) Write short notes on mobile telephone system.

3. a) Explain sliding window protocol with neat diagram.
b) Define CRC with example.

4. a) Explain different persistence strategies in CSMA protocol.
b) Briefly discuss different DLL switching techniques.

5. Compare the link state routing algorithm with shortest path routing algorithm with necessary parameters.

6. a) Differentiate between TCP and UDP protocols.
b) Discuss the various elements of transport protocols.

7. a) Write short notes on WWW with suitable diagram.
b) Distinguish between application layer and transport layer in OSI/ISO model.

8. Define the term cryptography and explain different types of cryptographic algorithms.

CODE No.:10BT61301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

DIGITAL CONTROL SYSTEMS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are digital control systems and how these are different from Analog Control Systems? With an aid of a block diagram show basic elements of a digital control system and give functioning of these elements.
b) Explain the advantages and disadvantages of digital control systems.

2. a) State and explain
i) Initial value theorem ii) Final value theorem
b) Obtain the inverse Z- transform of

i) $X(z) = \dfrac{Z(x+2)}{(Z-1)^2}$ ii) $\dfrac{Z^2}{(1+Z)(1-Z^2)}$

3. a) Write about Z-Transform method for solving difference method
b) Solve the following difference equation
$2x(k) - 2x(k-1) + x(k-2) = u(k)$, Where x(k) =0 for k<0 and

$$u(k) = \begin{cases} 1, k = 0,1,2 \\ 0, k < 0 \end{cases}$$

4. a) Define state transition matrix and explain in detail of closed loop systems.
b) Consider the system

$$\dot{X} = \begin{bmatrix} 0 & 0 & -2 \\ 0 & 1 & 0 \\ 1 & 0 & 3 \end{bmatrix} X \quad ; X(0) = \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}$$ obtain the state transition matrix.

5. a) Define controllability and observability of a linear time - invariant discrete - data systems.
b) Investigate the observability of a given system.

$$X(k+1) = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -2 & -4 & -3 \end{bmatrix} X(k) + \begin{bmatrix} 1 & 0 \\ 0 & 1 \\ -1 & 1 \end{bmatrix} u(k)$$

$$Y(k) = \begin{bmatrix} 0 & 1 & -1 \\ 1 & 2 & 1 \end{bmatrix} X(k)$$

6. a) For the characteristic poly nominal $B(z) = 2Z^4 + 7Z^3 + 10Z^2 + 4Z + 1$. Employing stability constraints, analyze using Jury's criterion?
b) Examine the stability of the following character equation.
$P(z) = Z^4 - 1.2Z^3 + 0.07Z^2 + 0.3Z - 0.08 = 0$ using Routh stability criterion.

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. (a) in which $G_P(S) = \dfrac{2(S+1)}{S(S+2)}$ and T = 0.5 Sec. Compute and plot the unit step response $C^{\bullet}(t)$ of the system. Find $C_{\downarrow}$ max $^{\uparrow}*$ and the sampling instant at which it occurs.

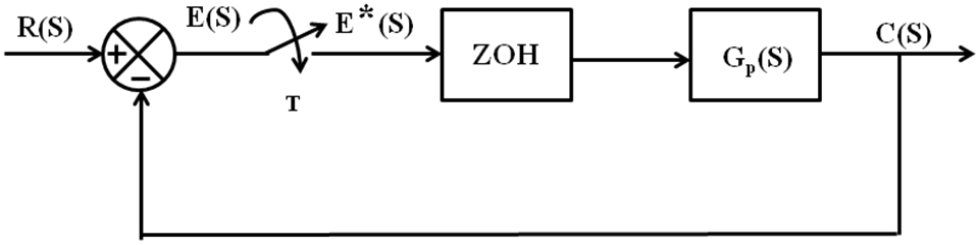


Fig. (a)

8. a) Write short notes on full order and reduced order observers.

b) Consider the system

$$x(k+1) = Gx(k) + Hu(k)$$

Where

$$G = \begin{bmatrix} 0 & 1 \\ -0.16 & -1 \end{bmatrix}, \quad H = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$$

Determine a suitable state feedback gain matrix K such that the system will have the closed-loop poles at $Z = 0.5 + j0.5,\ Z = 0.5 - j0.5$.

CODE No.:10BT61302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

ROBOTICS AND AUTOMATION

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. What are the different configurations of robots? Which of these configurations would be the most suitable for the following:
   a) Placing a component in a CNC machine tool.
   b) Picking a part from a moving conveyor.
   c) Placing an object in an oven for heat-treatment.
   d) Painting a motor car body.
   e) Welding a steel almirah frame.
   f) Inserting a peg into a hole.

2. a) Explain about pneumatic actuators.
   b) Write a brief note on mechanical grippers.

3. For each of the following applications, what is a good choice for the type of electric motor used? Justify your choice.

a) Robot arm joint	b) Ceiling fan	c) Electric trolley
d) Circular saw	e) NC milling machine	f) Electric crane
g) Disk drive head actuator	h) Disk drive motor	i) Windshield wiper motor
j) Industrial conveyor motor	k) Washing machine	l) Clothes dryer

4. Describe the four main types of motion control used in robot programming. Which provides the best control? Why this method is not used all the time?

5. Explain pick-and-place, palletizing and depalletizing operations.

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 Ns and that the gear train's efficiency is Ng.

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 differential rotation of $d\theta$ about axis K.

8. Describe the three categories of transfer systems that can be used with the in-line robot cell lay out with neat sketches.

CODE No.:10BT61501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

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) How to Select an Evaluation Technique? Explain.
b) Explain about the key characteristics of Binomial Distribution.

2. a) Explain about the various types of Stochastic Processes.
b) Explain about any two Operational Laws with an example.

3. a) Explain any three popular Benchmarks with suitable examples.
b) Draw and explain the state transition diagram for a Markov model.

4. a) Discuss the issues that occur during the design of software monitors.
b) Write the techniques used for improving program performance in Monitors.

5. a) How to determine Distribution of Data? Explain.
b) Define a Good Model. Explain about the estimation of Model Parameters.

6. a) Explain with example how 2^k factorial design with k=2 can be analyzed using a regression model.
b) Explain the rules of "Algebra of Compounding".

7. a) Explain the steps in a simulations study.
b) Define Random Number and explain Linear-Congruential method to generate the Random numbers with suitable example.

8. Explain about the calibration and validation of models with an example.

CODE No.:10BT62301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

BIOINFORMATICS

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. What is PERL and BIOPERL? Write down these languages importance and advantages in bioinformatics compared to other languages.

2. Describe the method of :
a) Alfred Russel Wallace b) Charles Darwin

3. Discuss the DNA mapping methods in very brief? Write the importance of DNA mapping.

4. How to submit the new gene sequence by using SEQUIN and write the method in detail.

5. Describe in detail about NCBI site and how it is associated with other databases.

6. Give short notes on a) MMDB b) DDBJ

7. Explain phylogenetic analysis.

8. How do we construct a phylogenetic tree using character based method?

CODE No.:10BT62302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

IMMUNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. What are Immunogens? Write the chemical nature and influencing factors of Immunogenesis?

2. Discuss about the different cells involved in immune system.

3. Draw the structure of spleen, and discuss on functions of M cells.

4. Write an account on Antigen-Antibody interactions with examples.

5. Explain the activation of B cells and their differentiation and effectors functions.

6. Discuss T-cells subclasses, their lineage and maturation process.

7. Explain the principles, mechanism and significance of Hypersensitivity reactions.

8. Write about the B-Cell, T-Cell, Phagocyte and Complement defects which results in Immunopathology.

CODE No.:10BT62303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

ENZYME ENGINEERING

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Compare and discuss the chemical catalysis and enzymatic catalysis.

2. Write short notes on the following
a) Characterization of enzymes b) Enzymatic assays

3. Explain in detail the concept of active site and describe the energetics of ES-complex formation.

4. Briefly discuss about
a) Substrate and product inhibition.
b) Allosteric regulation of enzymes.

5. Explain the advantages and disadvantages of enzyme immobilization.

6. Explain the analysis of film diffusion effects on kinetics of immobilized enzyme reactions.

7. Explain the design of membrane type enzyme reactor.

8. Describe the application of enzyme in analysis.

CODE No.:10BT62304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

APPLIED TRANSPORT PHENOMENA

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. What is a transport phenomenon? Write the Newton's law of viscosity, Fourier's law of heat conduction and Fick's law of diffusivity and explain why these three laws can be considered analogous.

2. a) Explain the mechanism of momentum transport.
b) Explain the rheological properties of fermentation broth.

3. Develop and explain the momentum balance equations for flow through circular tube.

4. Derive equations of change in dimensionless form for an isothermal system.

5. Explain the procedure for determination of power requirement for mixing in fermenters.

6. Derive an equation to concentration profile for diffusion of a vapor above liquid surface into a non diffusing gas.

7. Discuss the various methods of measurement of K_La in bioreactors.

8. Write a note on oxygen transfer in fermenters.

CODE No.:10BT62305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

BIOPROCESS DYNAMICS AND CONTROL

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Discuss about the following
a) Resistance thermometers b) pH meters

2. Describe the working and principles of a thermal conductivity cell used for gas analysis.

3. a) Derive the step response of a general first order system.
b) A thermometer having a time constant of 0.1min is at a steady state temperature of 90°F. At time t = 0, the thermometer is placed in a temperature bath maintained at 100°F. Calculate the time needed for the thermometer to read 98°F.

4. a) Derive the transfer functions for the following ideal controllers:
i) P controller ii) PI controller iii) PID controller
b) Write advantages of PID control over the P, PI, PD controllers.

5. What is root locus diagram? Explain the rules to plot the root locus diagram.

6. a) Define the terms 'Bode diagram', 'Cross over frequency' and resonant frequency.
b) Discuss the Bode diagram of a simple first order system.

7. Explain about Cascade control with an example.

8. What is meant by fermentation control? Discuss the control algorithms fermentation system.

CODE No.:10BT70501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

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) Describe the various phases of complier and trace the program segment 4 : * + = c b a for all phases.
b) Explain in detail about compiler construction tools.

2. Explain ambiguous grammar and LL(R) grammar.

3. Construct SLR parsing table for the following grammar.
E→E+T/T T→T*F/F F→(E)/id

4. a) Distinguish between the source text of a procedure and its activation at run time.
b) Discuss the various storage allocation strategies in detail.

5. a) Write notes on type conversion.
b) Describe about type expressions.

6. a) What is code optimization? What are its advantages?
b) Explain briefly about folding.
c) What are the problems in optimizing compiler design?

7. a) Discuss loop optimization techniques.
b) Explain data flow diagram with an example.

8. Write a short notes on
i) What is a flow graph? Explain with example.
ii) Discuss various object code forms.

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

WEB PROGRAMMING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Create simple HTML page which demonstrates the use of three types of lists.
b) Explain stylesheet class with suitable example.

2. a) Write a JavaScript code block using arrays and generate the current date in words, this should include the day, the month and the year. (Example: Todays date is 01-01-2013, and then the output should be as follows **Tuesday, January 01, 2013.**)
b) Write a JavaScript program to count the frequencies of words typed in a text area field and display the result in a neat table.

3. Define DTD. Create a DTD for your dairy which holds your appointments including day, date, time of the event and details of each event.

4. a) Discuss about security Issues in Servlets.
b) What is Servlet? Discuss various methods of javax.servlet.http.HttpServlet class.

5. a) Discuss any three JDBC API classes.
b) Write an application that takes a string from the command line and lists book details for books whose titles start with this string.

6. a) Explain briefly about MVC architecture with neat diagram.
b) Write JSP page to display the current date and time.

7. What is Java Bean? Explain useBean tag with suitable example.

8. a) Write Benefits of custom tag libraries.
b) Explain any two JSPTL tags.

CODE No.:10BT71204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations May - 2013

CRYPTOGRAPHY AND NETWORK SECURITY

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the four basic tasks in designing a security service as per the generic model.
b) What organizations under the Internet society are responsible for the actual work of Standards development and publication?

2. a) Explain the four options for delivering a key to two parties that wish to exchange data.
b) What properties a hash function must possess so as to use it for message authentication.

3. a) Explain the digital signature algorithm.
b) Explain about Kerberos.

4. a) Give the general structure of public key ring maintained by a PGP user and explain each field in detail.
b) Describe MIME transfer encodings.

5. a) Explain Authentication Header and Encapsulating security payloads format.
b) Explain about OKAELY protocol.

6. Explain about Transport Layer Security in detail.

7. a) Explain about SNMPV3 protocol with a diagram.
b) Explain about Statistical Anomaly Detection.

8. a) What is a firewall and mention the design principles?
b) Explain Application Level gateway protocol.

CODE No.:10MC1HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Regular/Supplementary Examinations March - 2013

ACCOUNTING AND FINANCIAL MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain the various accounting concepts relevant for the preparation of final accounts.

2. From the following information, prepare the Profit and Loss Account of a Trader for the year ending on 31st March 2013:

PARTICULARS	Rs.	PARTICULARS	Rs.
Gross Profit	5,00,000	Commission Allowed	2,000
Salaries & Wages	10,000	Commission Received	3,000
Wages & Salaries	1,000	Interest Allowed	3,000
Carriage Inward	2,000	Interest Received	4,000
Carriage Outward	5,000	Rent Paid	4,000
Freight Inward	3,000	Rent Received	5,000
Freight Outward	5,000	Apprenticeship Premium Received	5,000
Discount Allowed	50,000	General Expenses	10,000
Discount Received	17,000	Miscellaneous Income	30,000
Dividend Received	25,000	Charges	10,000
Audit Fee	30,000		
Legal Expenses	25,000		
Stationery Expenses	10,000		

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. Give a comprehensive note on the causes for overcapitalization and under capitalization.

5. Define Financial Management. “Maximization of Profit is regarded as the proper objective of investment decision. But it is not exclusive of maximizing shareholders wealth” - Do you agree? Explain in detail.

6. Critically examine the differences between Fund Flow Statement (FFS) and Cash Flow Statement (CFS).

7. What are the sources of raising capital? Explain the different sources of long-term financing with suitable examples.

8. A choice is to be made between the two competing proposals which require an equal interest of Rs. 50,000 and are expected to generate net cash flows as under:

Years	Project-A	Project - B
1	25,000	10,000
2	15,000	12,000
3	10,000	18,000
4	Nil	25,000
5	12,000	8000
6	6,000	4,000

Cost of capital of the company is 10%. The following are the present value factor at 10% p.a.

Year	1	2	3	4	5	6
PV factor at 10%	0.909	0.826	0.751	0.683	0.621	0.564

Which proposal should be selected using NPV method? Suggest the best project.

CODE No.:10MC1HS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Regular/Supplementary Examinations March - 2013

ENGLISH LANGUAGE AND COMMUNICATION SKILLS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What is communication? Explain different types of flow of communication in an organization.

2. i) Write the antonyms for the following words.
a) empower b) traceable
ii) Write the synonyms for the following words.
a) glib b) fraud
iii) Give one word substitution for the following.
a) A tyrannical leader.
b) A book of poems.
iv) Use the following idioms and phrases in sentences to make the meanings clear.
a) No fixed abode b) more by accident
v) Rewrite the sentences using the correct homophones from the given options:
a) I prayed at the _____ (altar/alter).
b) We all need _____ (bread/bred) to live.
vi) Write a sentence using the correct homograph.
a) change b) change

3. Define Reading skill explaining the different types.

4. Write an essay on the importance of listening in effective communication.

5. Explain silent reading and loud reading.

6. Why are interviews conducted and how should one prepare for an interview?

7. (a) What are the elements of a good business letter?
(b) Write short notes on:
i) Progress Reports
ii) E-mail

8. (a) What are the different types of technical presentations?
(b) Discuss the features of Video Conferencing.

CODE No.:10MC10101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Regular/Supplementary Examinations March - 2013

DISCRETE MATHEMATICAL STRUCTURES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. (a) State and prove the absorption laws. Show that $(p \wedge q) \rightarrow (p \vee q)$ is a tautology.
(b) Obtain the principle conjunctive normal form of the formula 'S' given by $(\neg p \rightarrow R) \wedge (q \rightarrow p)$.

2. a) Show that $R \wedge (P \vee Q)$ is a valid conclusion from the premises $(P \vee Q)$, $(Q \rightarrow R)$, $(P \rightarrow M)$ and $\neg M$.
b) Show that $(x)(H(x) \rightarrow A(x)) \Rightarrow (x)((\exists y)(H(y) \wedge N(x,y)) \rightarrow (\exists y)(A(y) \wedge N(x,y))$.

3. a) If A = {1,2,3,4} and B = {a,b,c,d}, determine if the following functions are one-to-one or onto
i) f = {(1,a),(2,a),(3,b),(4,d)}
ii) g = {(1,d),(2,b),(3,a),(4,c)}
b) Prove that every chain is a distributive lattice.

4. a) Show that if g: A → B is a homomorphism of an algebric system $\langle A, * \rangle$ onto $\langle B, \Delta \rangle$ and $\langle A_1, * \rangle$ is a subalgebra of $\langle A, * \rangle$, then the image of A_1 under g is a subalgebra of $\langle B, \Delta \rangle$.
b) Prove that for any commutative monoid (M, ∗), the set of idempotent elements of M forms a submonoid.

5. a) State and prove the inclusion-exclusion principle.
b) Define permutation and combination. Find the number of distinguishable words that can be formed from the letters of the word STRUCTURES.

6. Find all integral solutions to $y_1 + y_2 + y_3 = 3$ where each $y_i \geq 0$. Then list all integral solutions to $x_1 + x_2 + x_3 = 8$ where $x_1 \geq 3$, $x_2 \geq -3$ and $x_3 \geq 4$.

7. (a) When do you say that two graphs are isomorphic? Determine all non isomorphic simple non directed graphs of order 3.
(b) Prove that a given connected graph G is an Euler graph, if and only if all vertices of G are of even degree.

8. (a) Prove that a graph G is a tree if and only if G is connected and $|V| - 1 = |E|$.
(b) Write Kruskal's Algorithm for finding a minimal spanning tree.

CODE No.:10MC10102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Regular/Supplementary Examinations March - 2013

PROGRAMMING THROUGH C

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What are different tools available for programming? Explain.
b) Discuss the precedence and associativity of operators in C.

2. a) Explain about the ladder-if and nested-if statements.
b) Write a C program for finding the value of e^x series for a given value of x up to an accuracy of 4-digits.

3. a) Differentiate between one dimension, two dimension and multi dimension arrays. How to store array of strings? Explain
b) Write a C program to print the string in reverse order.

4. a) Explain about the arithmetic operations on pointers with suitable examples.
b) Using a single indirection pointer display the elements of a matrix.

5. a) What are the different parameter passing methods? Explain with suitable examples.
b) Write a program finding the factorial of a given n value.

6. a) Differentiate the structures and unions in C.
b) Develop an algorithm to create a single linked list and to traverse the list both the directions.

7. a) What are different preprocessor directives in C and Explain their use.
b) Discuss some of the file operations in C.

8. a) Write a program to clear a given rectangular region on screen in text mode.
b) Write a graphics program to draw vertical and horizontal lines using ***putpixel ( )*** function only.

CODE No.:10MC10103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Regular/Supplementary Examinations March - 2013

DATA STRUCTURES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe Asymptotic notation briefly.
b) Discuss the efficiency of an algorithm for the multiplication two square matrices.

2. a) What is a stack? How are push and pop operations performed?
b) How is an infix expression transformed to a postfix expression?

3. a) Write an algorithm to implement insertion and deletion operation in a circular queue using array.
b) Discus the following priority scheduling and round robin scheduling algorithm in multiprogramming environment.

4. a) What is a singly linked list? How are insertions and deletions performed on it?
b) Write about sparse matrix implementation.

5. (a) Apply quick sort algorithm to sort the list E,X,A,M,P,L,E in alphabetical order. Draw the tree of recursive calls made.
(b) Determine the best case, worst case and average case time complexity for linear and binary search methods.

6. a) What is a binary search tree? Explain an algorithm to perform search on it. Write its time complexities.
b) What are threaded binary trees? Explain the advantages of threaded binary trees over binary search trees with the help of an example.

7. What are AVL trees? Explain in detail the balancing of AVL trees.

8. (a) Write an algorithm for depth first search of a graph and explain with an example.
(b) Describe Dijkstra's algorithm for single source shortest path problem.

CODE No.:10MC1HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Supplementary Examinations October - 2013

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. A book -keeper has submitted to you the following Trial Balance wherein the totals of the debit and credit balances are not equal:

PARTICULARS	DEBIT (Rs.)	CREDIT (Rs.)
Capital	-	7,670
Cash in Hand	-	30
Purchases	8,990	-
Sales	-	11,060
Cash at Bank	885	-
Fixtures and Fittings	225	-
Freehold Premises	1,500	-
Lighting and Heating	65	-
Bills Receivable	-	825
Returns Inward	-	30
Salaries	1,075	-
Creditors	-	1890
Debtors	5,700	-
Stock at 01-04-2009	3,000	-
Printing	225	-
Bills Payable	1,875	-
Rates, Taxes, & Insurance	190	-
Discount Received	445	-
Discount Allowed	-	200
	24,175	**21,705**

You are required redraft the Trial Balance correctly as at 31-03-2010. Then prepare a Trading and Profit and Loss Account and a Balance Sheet after taking into account the following adjustments:

(a) Stock on hand on 31-03-2010 was valued at Rs 1,800.
(b) Depreciate Fixtures and Fittings by Rs.25
(c) Rs.35 was due and unpaid in respect of salaries.
(d) Rates and Insurance had been paid in advance to the extent of Rs.40.

3. Explain the importance of Ratio Analysis. Discuss any five ratios other than liquidity ratios, in detail with suitable examples.

4. In what respect is the objective of wealth maximization superior to the Profit maximization objective?

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. The following data are extracted from the books of G.V.K. Ltd.

Year	Sales	Total Cost(Rs.)
2008-2009	1,00,000	85,000
2009-2010	1,50,000	1,15,000

You are required to calculate the P/V ratio and Break-even point. If the selling price increased by 20%, what shall be the new P/V ratio and break-even point?

7. Explain the types of Leverages; state their significances.

8. Krishna Enterprises Ltd. is contemplating the purchase of a machine. Two machines A and B are available each at Rs. 25,00,000. In computing the profitability of machines, a discount rate of 10% is used. Earnings after taxation are expected to be as follows:

NET CASH FLOWS (Amount in Rupees)

Year	Machine 'A'	Machine ' B'
1.	75,000	25,000
2.	1,00,000	50,000
3.	1,25,000	1,00,000
4.	75,000	1,50,000
5.	50,000	1,00,000

Indicate which machine would be profitable investment using the following
1 Pay back period
2 Net present value method.

CODE No.:10MC1HS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Supplementary Examinations October - 2013

ENGLISH LANGUAGE AND COMMUNICATION SKILLS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What are the basic elements of communication?

2. i) Write the antonyms for the following words.
a) punish b) dignified
ii) Write the synonyms for the following words.
a) expenditure b) attractive
iii) Give one-word substitution for the following:
a) One who is recovering from an illness.
b) One who is present everywhere
iv) Use the following idioms and phrases in sentences to make the meanings clear.
a) put the best foot forward
b) look in
v) Rewrite the sentences using the correct homophones from the given options:
a) She purchase a house _____ (buy/by) the riverside.
b) She has _____ (bread/bred) evil thoughts in her mind.
vi) Write a sentence using the correct homographs.
a) cool b) cool

3. What are the study skills? What are the different techniques used to improve study skills?

4. What are the features of written communication?

5. What are the principles involved in note taking?

6. In a survey concerning TV viewing habits of men, women and children, the results are shown in the form of the table below

Table: TV viewing habits

Category	Percentage of viewers	Percentage of non-viewers
Men	44	56
Women	70	30
Children	80	20

Analyse this data and write a report.

7. (a) What is a report? What are the different types of reports?
(b) Write short notes on
(i) Thesis writing (ii) Fax

8. (a) What are the advantages and limitations of e-mail?
(b) Write short notes on e-mail security.

CODE No.:10MC10101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Supplementary Examinations October - 2013

DISCRETE MATHEMATICAL STRUCTURES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. (a) Show that $(P \vee Q) \wedge (\neg P \wedge Q) \Leftrightarrow \neg P \vee Q$.
(b) Define NAND and NOR connectives. For the formula $(P \wedge Q) \vee (\neg R \wedge \neg P)$, draw a corresponding circuit diagram using (i) NOT, AND and OR gates and (ii) NAND gates only.

2. (a) Show that the following premises are inconsistent
$\in \rightarrow S$, $S \rightarrow H$, $A \rightarrow \neg H$ and $\in \wedge A$.
(b) State the rules of specification and rules of generalization.
Show that $(\exists x)(p(x) \wedge Q(x)) ==> (\exists x)P(x) \wedge (\exists x)(Q(x)$

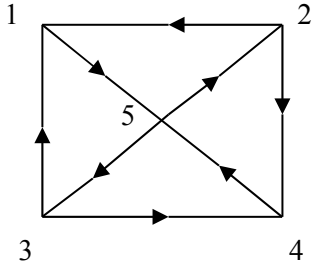
3. (a) Define reflexive relation. If the relations R and S are both reflexive, then show the $R \cup S$ and $R \cap S$ are also reflexive.
(b) Let $(L, \leq)$ be a lattice in which * and denote the operations of meet and join respectively. Then prove that for any $a,b \in l$, $a \leq b \Leftrightarrow a*b=a \Leftrightarrow a \theta b=b$

4. (a) Let(S,*) be given semigroup.Then prove that there exist a homomorphism $g:S \rightarrow S^s$ Where $(S^s,0)$ is a semigroup of functions from S to S under the operation of(left)Composition
(b) If $f:G \rightarrow H$ and $g:H \rightarrow K$ are homomorphisms, then prove that $gof:G \rightarrow K$ defined by $(gof)(x)=g\{f(x)\}$ is a homomorphism.

5. (a) How many committees of 5 or more can be choosen from 9 people.
(b) Write the generating function for a_r (where a_r is the number of ways the sum r can be obtained) when two distinguishable dice are tossed.
(c) In how many ways can the letters {5.a, 4.b, 3.c} be arranged so that all the letters of the same kind are not in a single block?

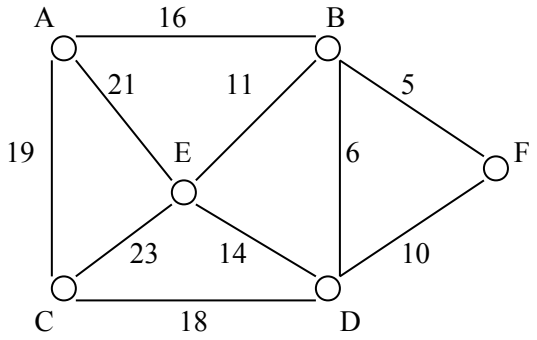
6. (a) State the Tower of Hanoi problem. Obtain a recurrence relation to the problem.
(b) Find the solution for the recurrence relation $a_n=6a_{n-1}-9a_{n-2}$ with initial conditions $A_0=1$ and $a_1=6$.

7. a) Show that the following digraph is an isomorphic.



b) Explain different storage representation of Graphs.

8. Explain Prim's algorithm. Use it to find minimal spanning tree of the following graph. Give detailed steps.



CODE No.:10MC10102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Supplementary Examinations October - 2013

PROGRAMMING THROUGH C

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Differentiate between an algorithm and a program. What is the need of an algorithm? Explain the compilation process.
b) Describe the anatomy of a C program.

2. a) Write the syntax of Switch statement. Differentiate between Switch Statement and else if ladder.
b) Write a C program to calculate factorial of a given number using while loop.

3. a) Write a program to compare two given strings without considering their case.
b) Write a program to find dot product of two vectors.

4. a) Explain about the arithmetic operations on pointers with suitable examples.
b) Using a single indirection pointer display the elements of a matrix.

5. a) Explain various parameter passing mechanisms to functions.
b) Define Local variables, Global Variables, Recursive function, Library function and User defined function.

6. a) Describe with example the declaration and initialization of a Structure.
b) Explain Enumerated types and bit fields with examples.

7. a) What is the use of *lseek()* function? Give possible argument values along with their functionality.
b) Write a program to display the selected record from a given binary file assuming that the file is already containing a sequence of records stored in it.

8. a) What are different basic text I/O functions?
b) Write a Program in 'C' to create a data entry menu of I B.Tech, CSE.

CODE No.:10MC10103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Supplementary Examinations October - 2013

DATA STRUCTURES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Write about abstract data type models.
b) Discuss about big-o notation and theta notation.

2. a) What is a stack? Discuss the implementation of a stack using arrays.
b) How is recursion implemented using a stack?

3. a) What are queues? How are they implemented?
b) Discuss the various ways of implementation of priority queues.

4. a) Give a non recursive procedure that reverse a single list of 'n' elements. The procedure should use no more than constant storage beyond that needed for the list itself.
b) Give a procedure that detect if any cycle exists between any two nodes in a single linked list.

5. a) What is sorting? Explain the heap sort with the help of an example. Write its time complexity in the worst case and in the best case.
b) Explain insertion sort with an example and write its time complexities.

6. a) What is a binary tree? Explain balanced binary tree, complete binary tree and nearly complete binary tree with examples.
b) What is a binary search tree? Explain an algorithm to perform search on it. Write its time complexities.

7. Explain the following applications of heaps

- Sorting
- Implementation of priority queues

8. a) What is a graph? Explain two most common structures used to represent a graph.
b) What are minimum spanning trees? Explain the algorithm to construct a minimum spanning tree for a given graph.

CODE No.:10MC2BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Regular/Supplementary Examinations October - 2013

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) Derive the Poisson distribution as a limiting case of Binomial distribution.
b) Explain Normal distribution. Give its properties.

4. a) Distinguish between point estimation and Interval estimation.
b) Explain (i) Parameter (ii) Statistic (iii) Standard Error of statistic.

5. a) Define i) Null hypothesis ii)Type - I error iii) Type - II error
b) The fatality rate of typhoid patients is believed to be 17.26%. In a certain year 640 patients suffering from typhoid were treated in a metropolitan hospital and only 63 patients died. Can you consider the hospital efficient.

6. a) Two researchers adopted different sampling techniques while investigating the same group of students to find the number of students falling in to different intelligence level. The result are as follows.

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

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

b) 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?

7. a) Compute the co efficient of correlation between X and Y using the following data

X	68	64	75	50	64	80	75	40
Y	62	58	68	45	81	60	68	48

b) Fit a parabola of second degree to the following data

X	0	1	2	3	4
Y	1	1.8	1.3	2.5	6.3

8. a) What is a control chart? Explain briefly the construction and uses of mean chart, p-chart and range 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.

CODE No.:10MC20101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Regular/Supplementary Examinations October - 2013

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) Perform the subtraction with the following unsigned binary numbers by taking the 2's complement of the subtrahend.
   i) 11010-10000
   ii) 100-110000
   iii) 11010-1101
   b) Simplify the following boolean expression
   $F(A,B,C,D) = \sum(0,1,2,5,8,9,10)$ and also draw the appropriate logic diagrams for that function.

2. a) Discuss about full adder and half subtractor.
   b) Draw the diagram of JK flip-flop with its truth table.

3. a) Explain arithmetic logic shift unit.
   b) Describe instruction cycle.

4. a) What is meant by computer instruction? Explain about the basic computer instruction formats using an example.
   b) Draw the flow chart for instruction cycle.

5. Draw the flow chart for basic computer operation.

6. How the selection of address is performed in control memory? Explain with block diagram.

7. a) Differentiate synchronous and asynchronous data transfer.
   b) Explain in detail programmed I/O and Interrupt driven I/O.

8. Write short notes on the following
   a) Associative Memory
   b) Virtual memory

CODE No.:10MC20102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Regular/Supplementary Examinations October - 2013

OPERATING SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Write short notes on evolution of operating systems.

2. Explain about various File directory structures.

3. Consider the following set of processes, with the length of the cpu burst given in milliseconds.

Process	Burst time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4 and P5 all at time 0.

Draw four Gantt charts that illustrate the execution of these processes using the scheduling algorithms FCFS, SJF, non preemptive priority (a small priority number implies a higher priority) and RR (quantum=1).

4. a) What is a critical section problem? Suggest a classic software based solution.
b) What is the Readers-Writers problems? How semaphores are useful for the solution?

5. a) Contrast the differences between deadlock prevention and deadlock avoidance methods.
b) Describe the methods of handling deadlock situations. Also explain the importance of recovery from deadlock.

6. What are page replacement algorithms and explain in detail?

7. Describe the model of protection, an Access Matrix with its Implementation in detail.

8. Define fault tolerance and explain fault tolerance techniques.

CODE No.:10MC20103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Regular/Supplementary Examinations October - 2013

OBJECT ORIENTED PROGRAMMING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following OOPS concepts:
i) Encapsulation ii) Polymorphism iii) Inheritance

b) What is variable size array? Write a program to explain the use of variable size array in Java.

2. a) Explain method overloading with an example.

b) Explain parameter passing techniques in Java with an example each.

3. a) Write a java program to add a substring in a given string.

b) What is inheritance? Why abstract classes are used in inheritance? Write a program in Java to explain use of abstract class in multilevel inheritance.

4. a) Write the differences between classes and interfaces.

b) Explain defining, creating and accessing a package with suitable example.

5. a) Explain the usage of try, catch and finally keywords with an example.

b) Explain the creation of thread with Runnable interface with an example.

6. a) Write a java program illustrating ActionEvent.

b) Write a java program to display an oval inside a rectangle.

7. a) Explain the Border and Grid layout managers with an example each.

b) Explain Applet Life Cycle methods.

8. a) What is URL? Write a java program to parse the URL.

b) List and explain the string comparison methods available in String class

CODE No.:10MC20104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Regular/Supplementary Examinations October - 2013

DATABASE MANAGEMENT SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Identify the main components in a DBMS and briefly explain what they do.
b) What are the main benefits of using a DBMS to manage data in applications involving extensive data access ?

2. a) Explain the different constraints as defined by ER-enterprise schema.
b) Differentiate between specialization & generalization with an example.

3. Consider the following relational schema
Emp(eid: integer, ename: string, age: integer, salary: real)
Works(eid: integer, did: integer, pct_time: integer)
Dept(did: integer, budget: real, managerid: integer)
Briefly answer the following questions:
a) Define a table constraint on Emp that will ensure that every employee makes at least $10,000.
b) Define a table constraint on Dept that will ensure that all managers have age>30.
c) Write SQL statements to delete all information about employees whose salaries exceed that of manager of one/more departments that they working (Integrity constraints should not be violated).

4. a) How errors are handled in PL/SQL? Explain with an example.
b) Explain parameterized cursors with an example.

5. a) Consider a relation *R* with five attributes *ABCDE*. You are given the following dependencies: $A \rightarrow B$, $BC \rightarrow E$, and $ED \rightarrow A$.
i) List all keys for *R*.
ii) Is *R* in 3NF ?
iii) Is *R* in BCNF?
b) Discuss in detail about the BCNF.

6. a) Explain how the use of strict 2PL would prevent interference between the two transactions.
b) What are the actions for which *logrecord* is written?

7. a) Explain lock-based concurrency control in detail.
b) What is locking protocol? Explain strict 2PL protocol.

8. Explain B^+ tree file organization with an example.

CODE No.:10MC2BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Supplementary Examinations December - 2012

PROBABILITY AND STATISTICS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) A and B throw alternatively with a pair of ordinary dice. A wins if he throws 6 before B throws 7 and B wins if he throws 7 before A throws 6. If A begins, show that his chance of winning is 30/61.
b) State and prove Baye's theorem.

2. a) Let X denote the minimum of the two numbers that appear when a pair of fair dice is thrown once. Determine the (i) Discrete probability distribution (ii)Expectation (iii)Variance
b) Find the value of k and mean of the probability density function $f(x) = k x^2 e^{-x}$ $0 < x < \infty$.

3. a) Six dice are thrown 729 times. How many times do you except at least three dice to show a 5 or 6 ?
b) A sales tax officer has reported that the average sales of the 500 business that he has to deal with during a year is Rs. 36,000 with a standard deviation of 10,000. Assuming that the sales in these business are normally distributed, find
(i) the number of business as the sales of which are Rs. 40,000.
(ii) the percentage of business the sales of which are likely to range between Rs. 30,000 and Rs. 40,000.

4. a) What is standard error of a statistic? Give it's importance.
b) A population consists of five numbers 2, 4, 6, 8, and 12. Enumerate all possible samples of size 2 that can be drawn from the population without replacement. Find the mean of the sampling distribution of sample mean.

5. a) A machine produced 20 defective articles in a batch of 400 articles. After overhauling, it produced 10 defectives in a batch of 300 articles. Has the machine improved?
b) A sample of 900 members has a mean 3.5 cms. and standard deviation 2.61 cms. Can it be concluded that the sample has drawn from the population of members with a mean 3.25 cms and standard deviation 2.61 cms.?

6. The following figures show the distribution of digits in numbers chosen at random from a telephone directory.

Digits	0	1	2	3	4	5	6	7	8	9
Frequency	1026	1107	997	966	1075	933	1107	972	964	853

Test whether the digits may be taken to occur equally frequently in the directory.

7. a) Fit a straight line y=a+bx to the following data:

X:	1	2	3	4	5	6
Y:	2	5	6.5	7	8	10.5

b) Calculate the Karl Pearson's coefficient of correlation between X and Y from the following data:

X:	1	3	5	8	12
Y:	2	4	6	4	8

8. a) Explain the method of construction of P-chart.
b) Construct C-chart for the number of defects from the following data:

Serial No. of carpet:	1	2	3	4	5
No. of defects:	5	4	3	2	6

CODE No.:10MC20101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Supplementary Examinations December - 2012

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 = XY'Z + X'Y'Z + XYZ

b) Convert the following decimal into binary.

41.6875

c) Convert the following hexadecimal number to binary and octal.

F3A7C2

2. Explain a 3-to-8 line decoder with a neat diagram and truth table.

3. a) What is a program interrupt? Explain different types of interrupts.
b) Write about RISC and CISC.

4. Explain program interrupt and interrupt cycle.

5. Describe the organization of micro programmed control unit with block diagram.

6. Explain the design of control unit in detail.

7. a) Differentiate RISC and CISC classification?
b) Explain micro instruction format. Also explain the field of micro operations decoded.

8. Write short notes on

i) Pipelining.
ii) Multiprocessors.

CODE No.:10MC20102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Supplementary Examinations December - 2012

OPERATING SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is an operating system? Explain about OS structure.
b) Compare the features of Windows 2000 OS with UNIX OS.

2. What are file allocation methods? Explain in detail.

3. a) Explain the following terms
i) Process.
ii) Thread.
iii) Scheduling.
iv) Dispatcher.
b) Write the differences between process and threads.

4. a) Define critical section problem. What are the requirements of solution to CSP?
b) Give semaphore solution for Dining-Philosophers problem.

5. a) Write Bankers algorithm to avoid the deadlock problem. Include safety algorithm also.
b) Explain methods for deadlock prevention.

6. a) What is fragmentation and explain the difference between internal and external fragmentation?
b) Write short notes on virtual memory.

7. Explain the following terms
a) Access matrix. b) Access control.
c) Security problem. d) Problem threats.

8. a) Define the following terms
i) Fault.
ii) Failure.
iii) Recovery.
b) Explain fault tolerance techniques.

CODE No.:10MC20103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Supplementary Examinations December - 2012

OBJECT ORIENTED PROGRAMMING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Elaborate the Java language descriptive statement (Buzz words).
b) Explain about the scope and life time of a variable in a Java program. Explain about the use of static keyword in this context.

2. a) Write a program to illustrate method overloading.
b) Write a recursive routine for factorial of a given number.

3. a) Explain about the inheritance feature in Java.
b) What is the use of *super* keyword in the context of inheritance? Give an example.

4. a) Write the differences between classes and interfaces.
b) Explain defining, creating and accessing a package with suitable example.

5. a) Explain the creation and usage of your own exception with an example.
b) Explain the thread synchronization with an example.

6. a) Write a Java program for displaying the contents of multiple files together using appropriate class(es) for creating a single concatenated input stream.
b) What is object serialization? Write a sample program for reading and writing objects into/from a file.

7. a) Write about AWT controls ?
b) Explain the concept of event handling.

8. a) List Three UI components of swings, their classes and constructors.
b) Explain the Applet life cycle. Also discuss Applet Tag used in HTML and attributes used in Applet Tag giving suitable example.

CODE No.:10MC20104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Supplementary Examinations December - 2012

DATABASE MANAGEMENT SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the component modules of a DBMS and their interactions with the architecture.
b) Explain about Database System Environment.

2. a) What is an ER-model? Briefly describe the features of different notations employed in ER-Data model?
b) Design an ER-diagram for keeping track of the exploits of your favorite sports team. You should store the matches played, the scores in each match & individual player statistics for each match.

3. 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)
The Catalog relation lists the prices charged for parts by Suppliers. Write the following queries in SQL:
a) Find the *pname*s of parts for which there is some supplier.
b) Find the *sname*s of suppliers who supply every part.
c) Find the *sname*s of suppliers who supply every red part.
d) Find the *pname*s of parts supplied by Acme Widget Suppliers and by no one else.
e) Find the *sid*s of suppliers who charge more for some part than the average cost of that part (averaged over all the suppliers who supply that part).
f) For each part, find the *sname* of the supplier who charges the most for that part.

4. a) How errors are handled in PL/SQL? Explain with an example.
b) Explain parameterized cursors with an example.

5. a) Give a set of FDs for the relation schema *R(A,B,C,D)* with primary key *AB* under which *R* is in 2NF but not in 3NF.
b) Give brief description about the functional dependencies.

6. a) Explain the problems associated with interleaved execution.
b) How does the recovery manager ensure atomicity of transaction? How does it ensure durability?

7. a) Define a deadlock and explain how can we prevent the deadlocks.
b) Explain with an example, the various operations that can be performed on sorted files.

8. Explain the working nature of extendable hashing with an example.

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CODE No.:10MC3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Regular/Supplementary Examinations December - 2012

OPERATIONS RESEARCH

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Define Slack and Surplus Variables in an L.P.P.
b) Use simplex method to solve the following L.P.P.

Maximize $Z = x_1 + 2x_2$

Subject to the Constraints : $-x_1 + 2x_2 \le 8$,

$x_1 + 2x_2 \le 12$,

$x_1 - 2x_2 \le 3$, $x_1 \ge 0$ and $x_2 \ge 0$

2. Solve the following transportation problem by Vogel'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. 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. A traveling salesman has planned to visit to 5 cities. He would like to start from a particular city, visit each city once and then return to the city from where he had started. The traveling cost (Rs) for each city is given below.

		To				
		A	B	C	D	E
From	A	-	7	5	3	5
	B	7	-	8	4	3
	C	7	8	-	6	2
	D	3	4	6	-	2
	E	5	3	2	2	-

In what sequence the salesman should visit all the cities in order to minimize the total traveling cost?

5. The following failure rates have been observed for a certain type of transistors in a digital Computer :

End of the week :	1	2	3	4	5	6	7	8
Probability of failure to date :	0.05	0.13	0.25	0.43	0.68	0.88	0.96	1.00

The cost of replacing an individual failed transistor is Rs.1.25.The decision is made to replace all these transistors simultaneously at fixed intervals, and to replace the individual transistors as they fail in service. If the cost of group replacement is 30 paisa per transistor, what is the best interval between group replacements? At what group replacement price per transistor would a policy of strictly individual replacement become preferable to the adopted policy?

6. a) Reduce the following game by dominance and find the game value

		Player B			
		I	II	III	IV
Player A	I	3	2	4	0
	II	3	4	2	4
	III	4	2	4	0
	IV	0	4	0	8

b) Explain Maxi-Min and Mini-Max principle used in game theory

7. Explain the inventory model with content rate of demand, scheduling time as variable. Obtain expression for economic order quantity (EOQ).

8. A project schedule has the following characteristics:

Activity :	1-2,	1-4,	1-7,	2-3,	3-6,	4-5,	4-8,	5-6,	6-9,	7-8,	8-9
Time :	2	2	1	4	1	5	8	4	3	3	5

Construct the PERT network, find critical path and time duration of the project.

CODE No.:10MC30101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Regular/Supplementary Examinations December - 2012

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 CSS? Determine the advantages & disadvantages of CSS. Explain with example, what are the ways to put CSS and HTML together?

2. Explain how DHTML works. Write down the advantages & disadvantages of using DHTML.

3. What is JDBC? How it works. Explain its MVC architecture in detail.

4. Explain the method of deployment of servlet with the Tomcat.

5. Give the MVC Architecture of a JSP. Discuss the advantages of this architecture.

6. Write a JSP program for implementing "address book".

7. Describe the functionality of **`IncludeAction`** of struts framework.

8. Explain about the SOAP encoding used for RPC transactions.

CODE No.:10MC30102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Regular/Supplementary Examinations December - 2012

COMPUTER NETWORKS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the advantages of Computer Networks?
b) Explain ARPANET.

2. a) Differentiate between periodic signals and aperiodic signals.
b) Give two examples of Analog information and Digital information.

3. Explain Shortest Path routing algorithms.

4. What are sliding window protocols? Explain one bit sliding window protocol.

5. Write about Transmission Control Protocol.

6. Write about audio compression and voice over IP.

7. Discuss about RSA algorithm.

8. Explain Email security and web security.

CODE No.:10MC30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Regular/Supplementary Examinations December - 2012

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) Define Data Warehouse and write how it is different from database?
b) What is metadata? Explain in detail about the different types of metadata.

2. Explain different schemas for decision support?

3. Explain KDD process. Describe major issues in Data Mining system.

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) Describe in detail association rule clustering systems.
b) Discuss the techniques used to improve the efficiency of apriori algorithm.

6. What is classification? How is classification performed using decision tree induction? Explain with an example.

7. a) Discuss mining data streams.
b) Explain k-means algorithm. Discuss the merits and demerits of partition based algorithms.

8. a) Explain Latent Semantic Indexing.
b) Write a note on HITS algorithm.

CODE No.:10MC30104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Regular/Supplementary Examinations December - 2012

SOFTWARE ENGINEERING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Define software? Explain software application domains in Brief.

2. What is an agile process and state the agility principles?

3. What are functional and non-functional requirements? Explain the different categories of non-functional requirements.

4. Explain various design steps in the architectural mapping using data flow.

5. Explain Design Patterns in detail.

6. What is V&V ? Explain the test strategies for conventional software.

7. Explain Graph-Based testing methods and Orthogonal Array testing in detail.

8. Define software reengineering and explain software reengineering process model in detail.

CODE No.:10MC3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Supplementary Examinations June - 2013

OPERATIONS RESEARCH

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain two phase simplex method by a suitable example.

2. Use Vogel's Approximation Method to obtain an initial basic feasible solution of the transportation problem:

	D	E	F	G	Available
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Demand	200	225	275	250	

3. A department has four subordinates and four tasks have to be performed. Subordinates differ in efficiency and tasks differ in their intrinsic difficulty. Time each man would take to perform each task is given in the effectiveness matrix.
How the task allocated to each persons so as to minimize the total man hours?

		Task			
		5	6	7	8
Subordinate	1	5	40	20	5
	2	25	35	30	25
	3	15	25	20	10
	4	15	5	30	15

4. A manufacturer is offered two machines A and B. A is priced at Rs. 5,000 and running costs are estimated at Rs. 800 for each of the first five years, increasing by Rs 200 per year in the sixth and subsequent years. Machine B which has the same capacity as A, Costs Rs 2500 but will have running costs Rs. 1200 per year for six years, increasing by Rs. 200 per year there after.
If money is worth 10% per year, which machine should be purchased, with no scrap values?

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 operation) cost, 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) Describe a two-person Zero-sum game.
b) Solve the following game by Linear Programming technique.

	Player B		
Player A	1	-1	3
	3	5	-3
	6	2	-2

7. a) Calculate economic lot size in units and total variable costs for the following items.

Assume an ordering cost of Rs 10 and Carrying cost of Rs 20%

Item	Annual Demand	Unit Price (Rs)
X	4000	4
Y	8000	2
Z	12000	8

Also compute

I. EOQ in rupees and in years of supply

II. EOQ frequency

b) Describe the basic characteristics of an inventory system.

8. Draw the network diagram and find the critical path and duration of the following project. Also find total free float and Independent float for each activity.

Activity	*a-b*	*a-c*	*a-d*	*b-c*	*b-f*	*c-e*	*c-f*	*d-e*	*e-f*	*f-g*
Duration	13	15	24	20	16	15	17	12	12	10

CODE No.:10MC30101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Supplementary Examinations June - 2013

WEB APPLICATION DEVELOPMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Discuss in detail about the following:
   a) Regular Expressions.
   b) Layers.

2. What is a well formed XML document? Explain with an example how to use a DTD in an XML document internally and externally.

3. What are scrollable resultset methods? How do you update resultset programmatically?

4. Explain the method of deployment of servlet with the tomcat.

5. What are the advantages of JSP? Compare JSP with servlets.

6. What are scripting elements and implicit JSP Objects? Explain them with suitable examples.

7. Describe the functionality of Forward Action class of struts framework.

8. Explain about the SOAP error message structure.

CODE No.:10MC30102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Supplementary Examinations June - 2013

COMPUTER NETWORKS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain the difference between TCP reference model and OSI reference model.

2. Write about various guided transmission media.

3. Write about Sliding Window Protocol.

4. Write about different approaches of congestion control in data gram subnets and Load shedding.

5. Discuss about Transport Layer quality of service parameters.

6. Write a short notes on the following
   a) Domain Name Systems.
   b) Multimedia.

7. Write short notes on the following:
   a) Substitution ciphers
   b) Message digests.

8. Discuss about Authentication Protocols.

CODE No.:10MC30104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Supplementary Examinations June - 2013

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 and software engineering? Discuss CMMI model and software myths.

2. What is an agile process and state the agility principles?

3. What do you mean by software requirements? Explain user requirements, system requirements and software requirement document.

4. Discuss architectural design in detail.

5. Explain component level design patterns and user interface design patterns.

6. What is meant by System Testing? Explain various types of system tests.

7. Explain Basis path testing with examples.

8. Write Short Note on:
(a) Reactive versus Proactive Risk Strategies.
(b) Risk Mitigation, Monitoring and Management.
(c) Software Maintenance & Software Supportability.

CODE No.:10MC4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Regular/Supplementary Examinations June - 2013

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 environmental scanning. Briefly describe the steps involved in its process.

2. What are different approaches to the study of organizational behavior?

3. What is the role of personality in Organizational Behavior?

4. Discuss the concept of perception. Explain the process of perception.

5. Explain Human Capital Management. Discuss the importance of Human Resource Management.

6. What are the factors affecting job design? Discuss contemporary issues in job design.

7. Distinguish between induction and orientation. What are the requisites for an effective orientation programme?

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) Regular/Supplementary Examinations June - 2013

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 about grep family of commands and cut & paste commands.

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 the concepts of template functions and operator overloading with examples.

4. Explain about the functionality of C++ stream functions and Unix system calls of files.

5. Using FIFOs, Write client-server programs for echo service.

6. Discuss the UNIX kernel support for signals with example.

7. Describe in brief about System V IPC interface functions.

8. Using datagram 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 June - 2013

MULTIMEDIA APPLICATION DEVELOPMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain Raster -scan system and Random-scan system.

2. Explain "Augmenting built-in classes and objects in Action script" with an example.

3. Write about Color Models in Images.

4. Explain about interfaces.

5. What is an exception and how do you an exception. Explain.

6. Explain about Bit Map programming.

7. Explain about multimedia over ATM networks.

8. Write short notes on
   i) QOS for IP protocols
   ii) Multimedia over ATM networks

CODE No.:10MC40104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Regular/Supplementary Examinations June - 2013

INFORMATION RETRIEVAL SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Define Information retrieval system. Explain the objectives and functional overview of information retrieval system.

2. a) Discuss various search capabilities of Information Retrieval system.
b) Write about various standards used in Information retrieval system.

3. Explain briefly about Indexing by Term, and Indexing by Concept.

4. Explain in detail about the Inverted File Structure.

5. Explain in detail Simple Term Frequency Algorithm and Inverse Document Frequency.

6. Define Clustering. Explain in detail about the Hierarchy of Clusters.

7. Describe the following:
i) Similarity Measures and Ranking ii) Cognition and Perception

8. Explain in brief the Hardware Text Search Systems.

CODE No.:10MC40108

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Regular/Supplementary Examinations June - 2013

SOFTWARE PROJECT MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain the evolution of software economics in detail.

2. List the principles of conventional software engineering.

3. List and explain the various Lifecycle Phases in brief.

4. Explain architecture in terms of technical perspective.

5. Explain about the following
   a) Cost and schedule estimation.
   b) Pragmatic planning.

6. a) Describe the activities of a software development team over the project life cycle.
   b) List and explain the basic fields of the software change orders (SCO).

7. List the dimensions in tailoring the process.

8. Discuss CCPDS-R software project in detail.

CODE No.:10MC4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Supplementary Examinations December - 2012

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 the functions of management. What are the contributions of Henry Fayol to the management?

2. Discuss organizational theory. What are the models of organizational behaviour?

3. Discuss the concept of behaviour. What are the managerial implications of individual behaviour?

4. How do you differentiate perception and learning in individual?

5. Give a comprehensive note on the evolution of the concept of HRM.

6. Write Nature & Process of Job Analysis.

7. Explain in detail the nature and significance of recruitment.

8. Briefly discuss the nature and prime objectives of employee training.

CODE No.:10MC40101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Supplementary Examinations December - 2012

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 about networking commands and text processing utilities.

2. Explain about the control structures used in Shell programming with suitable examples.

3. Explain the concepts of POSIX.1 FIPS Standards and X/Open Standards.

4. Explain about symbolic link and hardlink features of Unix file system. What are the relative advantages and disadvantages of symbolic links and hardlinks?

5. Explain the concepts of FIFO file class and Device file class.

6. Explain the UNIX kernel support for processes and process attributes.

7. What are POSIX.1b IPC methods? Explain the concept of UNIX System V messages.

8. What is Socket? Explain client/server message handling with example.

CODE No.:10MC40102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Supplementary Examinations December - 2012

MULTIMEDIA APPLICATION DEVELOPMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Discuss with examples the various interactive input methods and their modes of operation.

2. Explain the design of animation sequence and general functions of computer animation.

3. How do you represent image? Explain image data representation techniques.

4. List out the Data types and describe the concept of Type Checking in action script.

5. Explain in detail about the concept of Dynamic Action Script.

6. What are exceptions? Discuss its performance issues. List out the advantages and disadvantages of exceptions.

7. Explain in detail about various audio compression techniques.

8. What are the advantages of multimedia over IP? Explain each advantage.

CODE No.:10MC50101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular Examinations December - 2012

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. Briefly explain about Object Oriented System Development (OOSD) Life Cycle.

2. Explain the following:
i) Class hierarchy ii) Object relationships and associations.

3. Describe the UML Diagrams with suitable example.

4. a) Compare and Contrast sequence and collaboration diagrams.
b) Discuss about polymorphism and iterated messages in collaboration diagram.

5. Explain in detail about the Usecase diagram and give one example.

6. a) What is Pattern?
b) Explain in detail about Generative Pattern and Non Generative Pattern.

7. Enumerate the steps to model the following:
i) Adaptable systems ii) Physical database iii) Source code

8. Explain in detail about the guidelines for developing documentation.

CODE No.:10MC50102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular Examinations December - 2012

MANAGEMENT INFORMATION SYSTEM

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain the characteristics of Systems Approach.
2. What are the prerequisites of an information system?
3. Write a brief note on Basic Information Systems.
4. Develop a list of criteria for comparing alternative conceptual designs.
5. What problems might arise when detailed design overlap the development of the conceptual design? Discuss its advantages in detail.
6. Give a brief account of trends in technology for MIS.
7. Describe the Computer related acquisitions for MIS implementation.
8. Write a note on the problems during the design phase of MIS.

CODE No.:10MC50103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular Examinations December - 2012

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. a) Write about the following :
i) RMI ii) RMI API
b) Explain the benefits and pitfalls of Client Server computing.

3. a) What are .NET assemblies? Explain types of assemblies and their applications.
b) Explain how event handling is supported in C#.

4. Write an ADO **.**NET program for creating a student information system using necessary database.

5. Write a C# **.**NET code which explains Object Oriented Programming concepts in C#.

6. a) Explain in detail about Events and Delegates in **.**NET with examples.
b) Write a note on Late Binding.

7. a) Describe the Introspection of Java Beans.
b) Compare Java Bean and CORBA Bean with an example.

8. a) List the preliminary set of EJB guidelines.
b) Explain EJB Packaging.

CODE No.:10MC50106

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular Examinations December - 2012

SOFTWARE TESTING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain a model for testing and discuss the data pool on consulting with a database.

2. Discuss the implementation and application of path setting.

3. What are the transaction flows? Discuss their complications.

4. Why do we do compatibility test, and need domain testing.

5. a) Write the procedure for specification validation
b) Draw the six -variable kv chart for the Boolean expression.
(ABF)' +BCD'+AB'C'D'

6. Write detail notes about state testing and Distinguish transaction flow and data flow testing.

7. Discuss in detail metric and complexity.

8. a) What is the need for automated testing tools? Explain in brief.
b) Does any organization require an automated testing Tool? Justify your answer.

CODE No.:10MC50108

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular Examinations December - 2012

CLOUD COMPUTING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. How large organizations operate virtual service desk? Explain in brief .
Enlist the various benefits of virtualized technology.

2. a) What is VMware? Explain in brief.
b) Name most popular VMware applications and explain in brief.

3. "Fully Software Virtualization was hard to implement efficiently". Explain solution to overcome the problem.

4. Explain how to improve capacity through Virtualization.

5. Explain the standard maintained for cloud application Architecture.

6. Explain grid computing application architecture. Illustrate the process flow of a grid computing application with suitable diagram.

7. How Security as a Service achieved? Explain briefly the ways to do it.

8. Explain the following terms
a) Google App Engine b) IBM Clouds

CODE No.:10MC50101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Supplementary Examinations June - 2013

OBJECT ORIENTED ANALYSIS AND DESIGN

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain in detail about System Development Life cycle.

2. a) Enumerate the steps to model structural relationships.
b) Discuss in detail about Advanced classes.

3. a) What is an object diagram and what are the contents, common properties and uses of an object diagram?
b) Enumerate the steps to reverse engineer an object diagram.

4. What are the various modelling flows of Interaction diagram? Explain.

5. Explain in detail about the Activity diagram and give one example.

6. a) Discuss various kinds of components with example.
b) Explain the common properties, common contents and common uses of deployment diagrams.

7. Explain about catalog of Design Patterns.

8. Explain in detail about supporting Multiple Window Systems.

CODE No.:10MT10301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

GENERAL MICROBIOLOGY AND BIOCHEMISTRY

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What is pure culture? Discuss various types of pure culture techniques for the maintenance of microorganisms.

2. Describe various factors that effect bacterial growth in cultures.

3. a) Explain the role of numerical taxonomy in bacterial classification.
b) List out various biochemical methods used to differentiate *archaic* and *eubacteria*.

4. Sketch the structural differences between prokaryotic and eukaryotic cells with diagrams.

5. List out the important milestones in the history of Microbiology in chronological order.

6. Explain various structures of RNA and write their functions in detail.

7. Explain the Protein structure and write their functions in detail.

8. What is symbiotic nitrogen fixation and discuss the molecular nitrogen fixation with reference to nif genes.

CODE No.:10MT10302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

MOLECULAR BIOLOGY

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Discuss chromosomal organization in Eukaryotes.

2. Describe RFLP and its application.

3. What are the different kinds of post transcriptional modifications that occur in eukaryotic cells?

4. Discuss the process of protein synthesis in prokaryotes. How is this different in eukaryotes?

5. write short notes on:
a) Transposable elements and Ty elements.
b) Polyadenylation and capping of RNA.

6. What are mutations? How are they classified? Discuss with a couple of examples.

7. What are Rybozymes and describe them in detail?

8. What is cloning? Discuss the different steps involved in cloning. Comment on the important points to be considered while cloning any gene by taking a suitable example.

CODE No.:10MT10303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

MICROBIAL ENGINEERING

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the steps involved in bioprocessing?
b) Explain about recombinant systems for the improvement of industrial microorganisms.

2. a) What are the advantages and disadvantages of defined and complex medium?
b) What are the different physical steps involved in pretreatment of raw material in industrial fermentation?

3. Corn steep liquor contains 3% invert sugars and 60% water and the rest can be considered solids. Beet molasses containing 50% sucrose, 1% invert sugars, 18% water and the remainder solids is mixed with the corn-steep liquor in a mixing tank. Water is added to produce diluted sugar mixture containing 2% (w/v) invert sugars. 125 kg corn steep liquor and 45 kg molasses are fed into the tank.
a) How much water is required?
b) What is the concentration of sucrose in the final mixture?

4. The medium components for the growth and production of glycerol by an yeast was as follows (g/l): glucose 100, citric acid 2.5, yeast extract 2, ammonium chloride 3, $CaCl_2$ 0.5, $MgSO_4$ 1.0, KH_2PO_4 1.6, Na_2HPO_4 2.8, $FeSO_4$ 0.001, $ZnSO_4$ 0.002, $MnCl_2$ 0.001, $MnCl_2$ 0.005. Using Placket Burmann design, show the experimental design and on what criteria the medium components will be screened.

5. a) Water at 25^o C enters an open heating tank at a rate of 10 kg/h. Liquid water leaves the tank at 88^o C at a rate of 9 kg/h and 1 kg/h water vapor is lost from the system through evaporation. At steady state, what is the rate of heat input to the system?
Specific enthalpy of liquid water at 25^o C and 88^o C is 104.8 kJ/kg and 368.5 kJ/kg respectively
Specific enthalpy of saturated steam at 88^o C is 2656.9 kJ/kg.
b) How will you calculate the heat of reaction from heats of combustion?

6. Explain detail about design of batch and continuous sterilization.

7. Production of single cell protein from hexadecane is described by the following reaction Equation

$$C_{16}H_{34} + \mathbf{a}\ O_2 + \mathbf{b}\ NH_3 \rightarrow \mathbf{c}\ CH_{1.66}O_{0.27}N_{0.20} + \mathbf{d}\ C_20 + CH_20$$

Where $CH_{1.66}O_{0.27}N_{0.20}$ represents the biomass. If R.Q = 0.43, determine the stoichiometric coefficients.

8. a) What are the social considerations for the production of r-DNA products?
b) Explain the model of gene expression.

CODE No.:10MT10304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

IMMUNOLOGY

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Describe in detail various types of immunity in plants.

2. Discuss about cells & organs of immune system.

3. Discuss about Primary & Secondary immune response.

4. What are Immunoglobulins? Describe the fine structure of IgG with a neat labelled diagram and add a note on antigenic determinants.

5. Describe the principle of western blotting. Give an account of the process involved with a note on its applications.

6. Give a detailed account of structure of MHC molecules.

7. Give an account of the development of immunity to bacterial infection.

8. Describe the following
   a) Auto immune diseases.
   b) Immunodeficiency diseases

CODE No.:10MT10305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

PROCESS ENGINEERING PRINCIPLES

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What are the mechanical separations? Explain in detail.

2. a) A vertical cylinder with a freely floating piston contains 0.1 kg air at 1.2 bar and a small electric resistor. The resistor is wired to an external 12 Volt battery. When a current of 1.5 Amps is passed through the resistor for 90 sec, the piston sweeps a volume of 0.01 m^3. Assume (i) piston and the cylinder are insulated and
(ii) air behaves as an ideal gas with C_v = 700 J/(kg.K). Find the rise in temperature of air.
b) Discuss the importance of laws of thermodynamics in Phase and Reaction Equilibria.

3. a) What is the Newton's law of viscosity? Discuss the Newtonian and non-Newtonian fluids with suitable examples and plot.
b) Derive the Bernoulli's equation for one dimensional flow. State its limitation and applications in flow meters.

4. a) Write Erguns & Kozeny-Carman equations for pressure drop equation for flow through packed beds.
b) Explain briefly rotary pumps.

5. a) Write the effect of temperature and pressure on thermal conductivity.
b) A plane wall 20 cm thick has a thermal conductivity given by the following relation :
k = 2 + 0 .0005 T W/mK
Where T is temperature in Kelvin . If two surfaces of the wall are at 150^o C and 50^{o}C, determine the rate of heat transfer for a wall of 3 m x 5m.

6. a) Write a note on Grashoff number and explain its significance in convection.
b) Hot water (0.01 m^3 /min) enters the tube side of a cocurrent shell and tube heat exchanger at 80^{0}C and leaves at 50^{0}C. Cold oil (0.05 m^3/min) of density 800 kg/m^3 and specific heat of 2 kJ/(kg K) enters at 20^{0}C. Calculate the log mean temperature difference in ^{0}C .

7. a) Write short notes on penetration theory.
b) Define diffusion coefficient, Schmidt number and Sherwood number. Also write their physical significance.

8. a) Write various types of separation processes that can be used for the separation of gas- liquid systems and explain them briefly.
b) Identify the resistances that are important for the transfer of oxygen from gas phase to a microorganism.

CODE No.:10MT10306

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

ANALYTICAL TECHNIQUES IN BIOTECHNOLOGY

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What is blotting? Give a brief note on Southern blotting and add a note on its applications.

2. What is RCF ? Explain the principle and application of rate zonal centrifugation.

3. What is Distribution co-efficient? Explain, how samples are separated in affinity chromatography.

4. What is absorption? Explain the principle and applications of UV-VIS spectrophotometry.

5. Write an essay on the principle and various uses of electron spin resonance spectroscopy.

6. a) Explain the preparation and use of a micro array.
b) Write short notes on RIA.

7. What are proteins? How can you sequence them in protein sequenator? Explain.

8. Give the principles, procedure and applications of flow cytometry.

CODE No.:10MT16101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

ADVANCED MATHEMATICS FOR COMMUNICATION SYSTEMS

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Defined probability using axiomatic approach. State and prove different axioms of probability.
b) Define discrete, continuous and random variable. Obtain PDF & CDF of a random experiment tossing a coin thrice & condition to obtain random variable is getting a head.

2. a) Statistically independent random variables X and Y have probability densities.

$$f_X(x) = \begin{cases} \frac{3}{32}\left(4 - x^2\right) & -2 \le x \le 2 \\ 0 & \text{elsewhere in } x \end{cases}$$

$$f_Y(y) = \frac{1}{2}[u(y+1) - u(y-1)]$$

Find the exact probability density of the sum W = X + 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.

3. a) Explain different laws of large numbers.
b) Three statistically independent random variables X_1, X_2, and X3 are defined by

$\overline{X}1 = -1 \quad \sigma_{x1}^2 = 2.0$

$\overline{X}2 = 0.6 \quad \sigma_{x2}^2 = 1.5$

$\overline{X}3 = 1.8 \quad \sigma_{x3}^2 = 0.8$

Write the equation describing the Gaussian approximation for the density function of the sum X= X1+X2+X3.

4. a) Distinguish between stationary and ergodicity. Give an example for an ergodic process.
b) What do you mean by mean-ergodicity of a random process? State the sufficient conditions for the mean ergodicity of a randim process of {x(t)}.

5. Define Ergodicity, State and prove mean Ergodic theorem.

6. a) Define: Linear time invariant systems and wide sense stationary.
b) A differentiator is a linear system in which the output is the derivative of the input. That is y(t) = L(x(t)) = x′(t). Find the mean.

7. a) Define Markov Chain and give an Example.
b) Suppose that the Probability of dry day (state 0) following a rainy day(state 1) is 1/3 and the probability of rainy day following a dry day is ½. Give that may 1st is a dry day, find that (i) May 3rd is also a dry day (ii) May 5 th is a dry day.

8. State and prove Burke's Theorem.

CODE No.:10MT16102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

MODERN DIGITAL COMMUNICATION TECHNIQUES

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the expression for maximum SNR at the output of matched filter.

b) Consider a signal having a spectral density $S(\omega) = \frac{1}{\omega^2 + 1}$ and a noise having a spectral density of unity. Find the transfer function of the physically realizable Wiener filter that minimizes the output error and evaluate the error.

2. Explain memory less modulation in FSK and 16-QAM signals.

3. a) Explain M-ray FSK system with the help of transmitter and receivers.
b) Compare the band width of QPSK system with that of BPSK system.

4. a) Explain the concept of optimum receiver for an AWGN channel with ISI.
b) Explain the concept of CPFSK.

5. Analyse the performance of maximum like hood sequence estimation (MLSE) with ISI.

6. a) Classify the sequence properties of M- sequences.
b) Explain the fallowing terms in D.S. spread spectrum technique
1) Anti-jamming communication; 2) Processing gain.

7. Generate a 31 length maximal sequence with suitable diagram. Verify that the generated sequence has the properties of M-sequence.

8. Write the following:
i) Tau - Dither loop.
ii) Carrier tracking.

CODE No.:10MT16104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

COMPUTER COMMUNICATION NETWORKS

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the need for a layered architecture What are the functions of various layers in the internet protocol stack.
b) Compare datagram and Virtual circuit Networks.

2. a) Give the architecture and server of Electronic mail.
b) Explain about DNS.

3. a) Explain about multiplexing and demultiplexing in Transport Layer.
b) Briefly describe UDP protocol.

4. a) Explain about Hierarchical Routing.
b) What is Multicasting Routing?

5. a) Explain about Local Area Networks.
b) What are different check summing methods?

6. a) What are the hurdles for multimedia in today's internet?
b) How do you access audio and video through a webserver?

7. a) Describe briefly about public key encryption.
b) Describe about spoofing.

8. a) Explain in detail about Network Management.
b) Give the structure of management information SMI.

CODE No.:10MT16105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

INFORMATION AND CODING TECHNIQUES

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Consider a telegraph source having two symbols, dot and dash. The dot duration is 0.2s. The dash duration is 3 times the dot duration. The probability of the dot's occurring is twice that of the dash, and the time between symbols is 0.2s. Calculate the information rate of the telegraph source.
b) Write short notes on (i) Kraft's inequality (ii) Markov sources and (iii) Optimal codes.

2. a) A DMS X has six symbols, x_1, x_2, x_3, x_4, x_5 and x_6 with respective probabilities 0.2, 0.15, 0.05, 0.1, 0.25 & 0.25.
i) Construct a Shannon_Fano Code for X, and calculate the code efficiency.
ii) Repeat (i) for the Huffman code.
b) Write short notes on Asymptotic Equipartition Property (AEP).

3. a) Discuss Shannon's channel coding theorem for memory less channels.
b) Consider the channel matrix

$$P(Y/X) = \begin{bmatrix} 3/5 & 1/5 & 1/5 \\ 1/5 & 3/5 & 1/5 \\ 1/5 & 1/5 & 3/5 \end{bmatrix}$$

Compute channel capacity, channel efficiency and redundancy.

4. a) State and explain the information transmission theorem.
b) Explain the error correcting and correcting capabilities of block codes.

5. a) Show that C = {0000, 1100, 0011, 1111} is a linear code. What is its minimum distance?
b) Show that the code C = {0 0 0, 1 0 0, 0 1 1, 1 1 1) is not cyclic.
c) Explain briefly Hamming Code Decoding algorithm with an example.

6. A 1/3 rate convolutional code has the following generators:
g1 = [100], g2 = [101], and g3 = [111]
i) Draw the encoder circuit corresponding to this code.
ii) Draw the state transition diagram for this code.
iii) Draw the state diagram for this code.
iv) Draw the trellis diagram for this code.
v) This code is used for transmission over a AWGN channel with hard-decision decoding. The output of the demodulator detector is (101001011110111……). Using the Viterbi algorithm, find the transmitted sequence.

7. a) Derive the Shannon Channel coding theorem.
b) List out and explain the Rate distortion function and properties.

8. a) Explain in detail the principle of operation of Turbo encoder with neat block diagram.
b) Write short notes on Coding and Interleaving applied to the compact disc digital audio system.

CODE No.:10MT16108

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

RADAR SIGNAL PROCESSING

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Obtain the range equation of monostatic radar.
b) Explain the minimum detectable signal (S_{min}) which corresponds to the minimum detectable signal to noise ration.

2. a) Obtain the output signal equation from the matched filter.
b) Explain with proper equation of the matched filter for nonwhite noise as the input.

3. a) Explain how automatic detection will performs the operations required for the detection decision.
b) With block diagram explain how CA-CFAR works.

4. How the waveform transmitted by a radar can affect the following
a) Target detection b) Measurement accuracy
c) Resolution d) Ambiguities
e) Clutter rejection
How ambiguity diagram can be used to access the above effects quantitatively.

5. a) Describe the types of phase compression waveforms useful in radars.
b) Explain the methods of controlling the side lobes.

6. a) Explain how a CW signal will be compressed through a taped delay line.
b) Explain about how sidelobes can be reduced by using Barker codes.

7. a) Explain in detail about non linear FM pulse compression.
b) Explain how sidelobes can be reduced by using Phase coding methods.

8. a) Discuss about cross - correlation properties, compatibility of pulse compression methods.
b) Compare different pulse compression methods by using suitable waveforms.

CODE No.:10MT23803

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

DETECTION AND ESTIMATION OF SIGNALS

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the different operating characteristics of a Receiver?
b) Given for a binary decision problem

$$P\left(\frac{y}{m_1}\right) = \frac{1}{\sqrt{2\pi}}\exp\left(\frac{-y^2}{2}\right)$$

$$P\left(\frac{y}{m_2}\right) = \frac{1}{\sqrt{2\pi}}\exp\left(\frac{-(y-1)^2}{2}\right)$$

And P[d2/m1]=False alarm probability=0.25. Using the Neyman-Pearson criterion, obtain the decision rule and the decision regions.

2. a) Derive the decision rules by considering the observations as a point in an N-dimensional space by defining the vector Y as $Y = [y_1, y_2, y_3, \ldots\ldots y_N]^T$
b) Explain the performance of Receiver when the transmitted signal is corrupted by the addition of Stationary Gaussian noise.

3. Design a integrating optimum receiver for a known signal observed over the interval [0,T] in the presence of noise with spectral density and autocorrelation function

$\phi_\vartheta(s) = \frac{2\alpha\beta}{-s^2+\beta^2}$ and $\phi_\vartheta(\tau) = \alpha e^{-\beta|\tau|}$

4. a) Consider θ as a constant but unknown value, determine θ by maximizing the density function P(θ/y).
b) Prove that minimum mean square estimate will be optimum for several cost functions.

5. a) Discuss about the following:
i) Uniform cost function.
ii) Absolute value cost function.
b) With an example, discuss about least squares method.

6. What is Cramer Rao bound and what are its limitations? Discuss how a lower bound on the mean square estimation error helps to get tighter lower bounds improving the SNR threshold prediction.

7. Consider the following message and observation models in which α is an unknown constant parameter.

$x_1(t)=x_2(t)$
$x_2(t)= - x_1(t) - ax_2(t) + w(t)$
$z(t) = x_1(t) + \upsilon(t)$

Where $w(t)$ and $v(t)$ are zero-mean, white, with unity variance, and uncorrelated with each other. Consider $\alpha(t)= x_3(t)$ as a state and $x_3=0$. Set up Kalaman filter algorithm for this problem.

8. Write a short notes on the following:
a) Exponential families
b) Statistical estimation of unknown parameters.

CODE No.:10MT16301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

TCP/IP PROTOCOLS

[Computer Networks and Information Security]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is the need for standards? What are the limitations of standards?
b) What are the different standard making organizations within India and outside India?
c) What is the standardization process for Internet protocols?

2. Explain in detail classless addressing.

3. a) What is the need for Grouping?
b) Explain the working of Internet Group Management Protocol.

4. Explain the services, features and packet format of stream control transmission protocol.

5. a) What is Unicast routing and Multicast routing?
b) What are the applications of multicasting?
c) Explain how multicasting is achieved.

6. a) How DNS works in the Internet environment?
b) What are the different types of DNS records?

7. a) Give a brief note on NVT character set.
b) Explain the working of *trivial file transfer protocol*.

8. a) What are the issues related to network management?
b) How network is managed using SNMP?

CODE No.:10MT16302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

DATABASE SECURITY AND PRIVACY

[Computer Networks and Information Security]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Write down any 'authorization matrix' and explain its significance.
b) Draw a neat sketch showing the architecture of a DBMS including the security features and explain the same.

2. a) Explain Non Discretionary Access Control.
b) Explain the features like User role assignment and support for role relationships and constraints in Discretionary Access Control.

3. a) Explain how a salt-based technique can be used to implement 'code uniqueness' of a password.
b) With reference to the design of a secure operating system, describe the kernel-based approach.

4. a) With reference to secure DBMSs, describe the system high mode and the multilevel mode.
b) Draw a neat sketch showing an integrity lock architecture and explain the same.

5. a) Explain how fine grained access controls are implemented with Views in Oracle.
b) Discuss the need for Virtual Private Databases (VPD).

6. a) With reference to intrusion detection, distinguish between 'anomaly detection models' and 'misuse detection models'.
b) Describe the seven types of intrusion that can be detected by Haystack.

7. Explain:
a) Intrusion Detection system and
b) Intrusion Prevention system.

8. Discuss the importance of Database Auditing and explain the Auditing process.

CODE No.:10MT16303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

NETWORK MANAGEMENT SYSTEMS

[Computer Networks and Information Security]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about Communications Protocols and Standards.
b) Describe about Network and System management.

2. a) Explain in detail about Network management model and Organization model.
b) Describe the Communication model.

3. Explain in detail SNMP Communication and Functional Models.

4. a) Explain in detail about SNMPv2 management information base.
b) Explain about SNMPv2 System Architecture.

5. a) Explain key features of SNMPv3.
b) Write short notes on SNMPv3 Access Control.

6. Explain in detail about RMON SMI and MIB.

7. Explain in detail about Integrated View and Implementation issues of TNM.

8. a) Write short notes on Distributed Network Management.
b) Explain Optical Access Networks.

CODE No.:10MT20502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

DATA WAREHOUSING AND DATA MINING

[Computer Networks and Information Security]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe any four primitives for specifying a data mining task.
b) Discuss various data mining functionalities.

2. a) Explain the various techniques involved in data cube technology.
b) Discuss the issues regarding data warehouse architecture.

3. Discuss about data generalization and summarization based characterization.

4. a) What is the importance of cross validation and boot strap in evaluating the accuracy of classifier or predictor?
b) Define ROC curves. What is the use of ROC curves in classification models explain with a neat diagram?

5. a) Explain briefly about
i) Market basket analysis .
ii) Frequent item sets and closed item sets.
iii) Frequent pattern mining.
b) What is the purpose of "Attribute selection measures" in classification by Decision tree induction? How we can use the "Tree pruning" in classification?

6. a) Categorize major clustering methods.
b) Explain Grid-based methods.

7. a) Describe different types of mining data streams. Explain.
b) Explain about Sequential Pattern Mining.

8. a) Explain a method of mining spatial data.
b) Write about mining multimedia database.

CODE No.:10MT22504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

SOFTWARE SECURITY ENGINEERING

[Computer Networks and Information Security]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the role of processes in software security.
b) Explain about the risk management framework for software security.

2. a) What are the properties of secure software?
b) Give a brief description about features of software security.

3. a) Explain about the requirements prioritization for secure software.
b) Explain the in secure software for architecture.

4. a) Explain the role of architecture and design in secure software.
b) Explain the risk mitigation in secure software for architecture.

5. Explain about the code analysis for secure coding.

6. a) Explain the wide spectrum of failures in software.
b) Explain about complexity drivers in secure software analysis.

7. What are the different security aspects need to be considered in project management for developing More secure software?

8. How do you measure technical security using security metrics?

CODE No.:10MT10501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

COMPUTER ARCHITECTURE

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Determine the values of A, B, C, and D that make the sum term A^{I} + B+ C^{I}+D equal to zero.
b) Compare and contrast J-K and R-S flip-flops.

2. a) A 36-bit floating point binary number has 8 bit plus sign for the exponent and 26 bits plus sign for the mantissa. The mantissa is a normalized function. Numbers in the mantissa and exponent are in signed - magnitude representation. What are the largest and smallest positive quantities that can be represented, excluding zero?
b) Derive the circuits for a 3-bit parity generator and a 4-bit parity checker using an even-parity bit and explain.

3. a) Show the block diagram of the hardware that implements the following register transfer statement. $yT_2 : R_2 \leftarrow R_1, R_1 \leftarrow R_2$.
b) A digital computer has a common bus system for 16 registers of 32 bit each. The bus is constructed with MUXes.
(i) How many selection inputs are there in each MUX ?
(ii) How many MUXes are there in the bus?

4. a) Formulate a six-segment instruction pipeline for a computer. Specify the operations to be performed in each segment. Determine the number of clock cycles that it takes to process 200 tasks in the above pipeline.
b) Derive an algorithm for evaluating the square root of a binary fixed-point number.

5. a) What is the difference between hardwired control and microprogrammed control? Is it possible to have a hardwired control associated with a control memory?
b) Show how a 9-bit microoperation field in a micro instruction can be divided into sub fields to specify 46 microoperations. How many microoperations can be specified in one microinstruction ?

6. a) Compare and contrast various types of memories.
b) A computer employs RAM chips of 256 × 8 and ROM chips of 1k × 4. The computer system needs 512 bytes of RAM, 2K bytes of ROM, and one interface unit with 256 registers. A memory- mapped I/O configuration is used. The two higher -order bits of the address bus are assigned 00 for RAM, 01 for ROM, and 10 for interface registers of 64 bit.
i. How many RAM and ROM chips are needed?
ii. Draw a memory-address map for the system.
iii. Give the address range in hexadecimal for RAM, ROM, and interface.

7. a) In most computers an interrupt is recognized only after the execution of the instruction. Consider the possibility of acknowledging the interrupt at any time during the execution of the instruction. Discuss the difficulty that may arise.
b) What is the difference between isolated I/O and memory-mapped I/O? What are the advantages and disadvantages of each ?

8. a) Describe the following terminology associated with multiprocessors
(i) mutual exclusion (ii) critical section
b) Discuss the difference between tightly coupled multiprocessors and loosely coupled multiprocessors from the view point of hardware organization and programming techniques.

CODE No.:10MT10502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

DISCRETE STRUCTURES AND AUTOMATA THEORY

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is the importance of a normal form? Obtain the principal conjunctive and disjunctive normal forms of $\mathbf{Q \wedge (P \vee \neg Q)}$.
b) What do you mean by inconsistent premises? Show that the set of premises - $\mathbf{P \rightarrow Q}$, $\mathbf{P \rightarrow R}$, $\mathbf{Q \rightarrow \neg R}$, **P** are inconsistent.

2. a) How many relations are there on a set with n elements? If a set A has m elements and a set B has n elements, how many relations are there from A to B. If a set A=(1,2), determine all relations from A to A.
b) Suppose G_1 and G_2 are two groups. If Ø is a mapping from $G_1 \rightarrow G_2$ such that Ø(a.b)=Ø(a).(b) ∀ a, b ϵ G, then Ø is said to be a homomorphism, show it.

3. a) Explain the principles of Inclusion-Exclusion with example.
b) Determine the sequence generated by $1/(1-x) + 3x^7-11$.

4. a) Define following terms with examples - **Hamiltonian Path**, **Planar Graph** and **Minimum spanning tree**.
b) Discuss the prime's algorithm for computing minimum spanning tree from a graph.

5. a) Define the terms - Grammar, Language generated by grammar and derivation with examples
b) Design a finite state automaton which accepts strings in **{a, b}** such that number of occurrences of **a**'s is even.

6. Define Left Linear Regular Grammar and Right Linear Regular Grammar. Design a Regular Grammar, **G**, for the regular expression **a (a + b)* a**. Show that the string **aabbab** is not a sentence of the language defined by **G**.

7. a) Design a context free grammar to generate all strings from **{a,b,c}** which are palindromes. Show the parse tree for a string **abcba**.
b) Design a context free grammar to generate the set of arithmetic expression on integers, where **+, -, *** and / are the binary operators with their normal operator precedence. Give the parse tree for the expression using your grammar **23+4*5**.

8. Give the formal definition of a Turing machine. What is a halting problem of Turing machine? Design a Turing machine which computes **n+m,** where **n** and **m** are two positive integers supplied as input to the machine.

CODE No.:10MT10503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

DATA STRUCTURES AND ALGORITHMS

[Computer Science, Computer Networks and Information Security]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Write the ADT for Linked Queues.
b) Evaluate the following Postfix Expression using Linked Stack implementation.
L M N O P ^ * / -

2. How to analyze the best case, worst case and average case of an algorithm? Work out the three cases for quick sort algorithm.

3. a) What is a binary tree? Explain about binary tree traversals.
b) Explain about graph traversals techniques.

4. a) What are the differences between binary tree and binary search tree?
b) Define AVL trees. Explain its operations with an example.

5. a) How to construct an 'Expression Tree'?
b) Briefly explain about 'Splay Trees'?

6. Define Spanning Trees. Explain with an example the Prim's method to find the minimum cost spanning tree.

7. a) Define reliability design problem in detail.
b) Apply dynamic programming to all pairs shortest path problem.

8. What is the basic method of Branch and Bound? Give brief description about 0/1 Knapsack using Branch and Bound.

CODE No.:10MT10504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

SOFTWARE ENGINEERING

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the nature of software by justifying the statement "*Software doesn't wear out, but it does deteriorate*".
b) What are the approaches proposed to software process assessment and improvement?

2. a) Explain incremental process model in software development with advantages and disadvantages?
b) Describe briefly about Unified process?

3. a) Distinguish between functional and non functional requirements.
b) How is Software Requirement Specification generated?

4. a) What is modular design?
b) Discuss the techniques for effective modular design.

5. a) Discuss briefly the Software Architecture.
b) Distinguish between Object Oriented view and conventional view of software design.

6. a) What is the test strategy for conventional software?
b) Explain briefly about validation testing.

7. How are risks identified in the design of software? Suggest mechanisms to overcome the risks without affecting the functional and performance requirements ?

8. a) How are risks managed in Software?
b) Discuss the software configuration management process.

CODE No.:10MT10505

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

DATABASE MANAGEMENT SYSTEMS

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. (a) Explain the three schema architecture of DB system.
(b) Draw ER diagram for a college, the data is about students, teachers and class which are related by teaching and enrollment. Assume appropriate attributes.

2. (a) What is *minimal cover* of a set of functional dependencies? Give an algorithm to find minimal cover for a given set of functional dependencies.
(b) Consider a relational schema R = {A,B,C,D,E,F,G,H,I,J}. Let the set of functional dependencies be F = { {A,B}→ {C}, {A} → {D,E}, {B} → {F}, {F} → {G,H}, {D}→ {I,J} }. Find all candidate keys for R. Decompose R into 2NF and then to 3NF.

3. Convert the following relational algebra expressions into both tuple and domain relational calculus (Note, * denotes *natural join*) .
(a) $\pi_{<A,D>}\ (R(A,B,C) \times S(D,E))\pi_{<A,D>}\ (R(A,B,C) \times S(D,E))$
(b) $\sigma_{<A=D>}\ (R(A,B,C) * S(C,D))\sigma_{<A=D>}\ (R(A,B,C) * S(C,D))$
(c) $(R(A,B,C) - S(A,B,C)) \cap T(A,B,C)\ (R(A,B,C) - S(A,B,C)) \cap T(A,B,C)$
(d) $R(A,B) \div S(A)R(A,B) \div S(A)$

4. (a) Let *Hostel = {Roll_no, Hostel_name, Room_no}, Student = {Roll_no, Student_name, Branch, Course, Year}*. Write SQL queries to find (i) Number of vacant rooms in each *Hostel* in the format <*Hostel_name, No_vacant_rooms*> (ii) List of students who are room-mates to the student with Roll_no = '10CSM520' and who are studying in CSE *Branch.*
(b) Consider the relation schemas, *Teacher = {Teacher_name, Designation, Branch, Subject}* where *Subject* is the subject name the teacher is teaching (Note, a teacher can teach more than one subject, and in this case, there will be more than one tuple in the relation with same *Teacher_name,* but with different *Subject*), *Text = {Text_book_name, Author, Subject}*. For a subject there can be more than one text book. Write PL/SQL code to find teachers who are teaching at-least 2 different subjects and who are using at-least one text book written by the author *'Ullman'* . The result should be in the format <*Teacher_name, Branch, Subject, Text_book_name*>.

5. (a) Explain distinction between closed and open hashing and discuss the relative merits of each technique in database application.
(b) What is the main problem in indexing a nonunique attribute using B+ tree? How do you resolve this problem?

6. (a) Compare two log based recover schemes in terms of ease of implementation and overhead cost.
(b) What do you mean by transaction atomicity and explain conflict serializability?

7. (a) Discuss various types of data fragmentation with suitable examples used in a distributed database design.
(b) Give an example of global schema, fragmentation schema, and additional semantic knowledge, such that all this information can be used for deducting the simplification of a query.

8. (a) What is statistical database? Discuss the problem of statistical database security.
(b) What are the differences among immediate, deferred and detached consideration and execution of active rule conditions?

CODE No.:10MT10509

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

SOFTWARE TESTING METHODOLOGIES

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain the following Dichotomies:
   a) Testing versus Debugging
   b) The Designer versus Tester
   c) Modularity versus Efficiency

2. a)Explain the following:
   i. Predicate
   ii. Predicate Expressions
   iii. Predicate Coverage
   b) Explain about testing blindness.

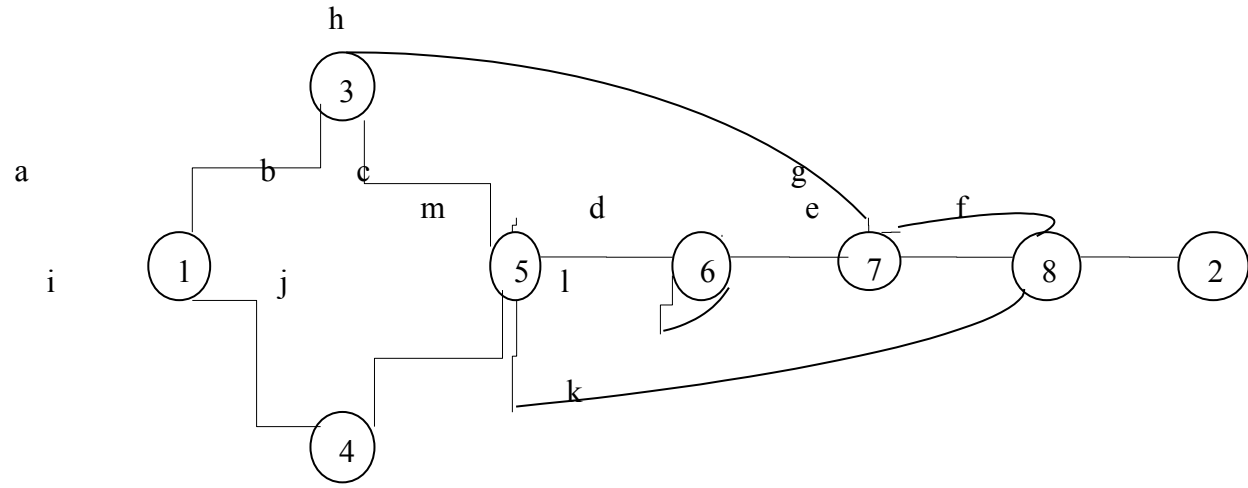
3. Explain the transaction flow testing techniques.

4. Explain the following:
   a) Ugly domains and how Programmers and testers treat them.
   b) Domain bugs and how to test for them.

5. a) Calculate the maximum number of different paths possible for the following path expression:
   a(b+c)d{e(fi)*fgj(m+l)k}*e(fi)*fgh.
   Assume that the outer loop can be taken zero to two times and the inner loop will be taken exactly three times.
   b) Write about the usage of Huang theorem in flow-anomaly detection in regular expressions.

6. a) Define a state graph. Draw and explain the Tape Control Recovery Routine state graph.
   b) Also draw the state table for the above Tape Control Recovery Routine State Graph.

7. a) Explain the node reduction algorithm. Apply the node reduction algorithm for the following graph:



   b) Write briefly about the applications of node reduction algorithm.

8. Explain the methodology how to evaluate automated testing tools.

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CODE No.:10MT13801

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

ADVANCED DIGITAL SIGNAL PROCESSING

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove the following properties using DTFT
   i) Convolution in time domain
   ii) Time shifting
   b) Determine the inverse DTFT of $G(e^{j\omega}) = 1/(1-\alpha e^{-jL\omega})$, $|\alpha| < 1$, where L is positive integer.

2. a) Determine the inverse of the casual stable LTI system characterized by a transfer function $H(z) = \frac{\left(z - \frac{1}{4}\right)\left(z + \frac{1}{5}\right)}{\left(z + \frac{1}{2}\right)\left(z - \frac{1}{3}\right)} \quad |Z| > \frac{1}{2}$
   b) Determine the transfer function from its energy density spectrum given by $S_{yy}(e^{j\omega}) = \frac{1.05 + 0.4\cos\omega}{1.25 - \cos\omega}$

3. a) Illustrate the procedure to realize the fourth order digital FIR transfer function.
   b) Realize the given transfer function in the form of a parallel connection of two all pass filters: $H(z) = (2 + 2z^{-0.5})/(3 + z^{-1})$.

4. a) Explain in detail the linear filtering approach for computation of DFT using chirp z - transform.
   b) Explain the split radix FFT representation and explain the differences between split radix and radix-4 FFT.

5. Consider the signal $x(n) = a^n u(n);\ |a| < 1$
   i) Determine the Spectrum X(ù)
   ii) The signal x(n) is applied to a decimator that reduces the rate by a factor of Determine the output spectrum
   iii) Show that the spectrum in part (2) is simply the Fourier transform of x(2n)

6. a) Determine the mean and variance of power spectral estimate of Blackman and Tukey method.
   b) Compare parametric and non-parametric estimation methods.

7. Derive the relation between autocorrelation and model parameters.

8. Write short notes on the following.
   i) Discrete- time analytic signal generation
   ii) Spectral analysis of Non-stationary signals.

CODE No.:10MT13802

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

DIGITAL COMMUNICATION TECHNIQUES

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss about the Central limit theorem and explain its usefulness in communications.
b) A random process has a spectral density given by $S(f) = 10^{-4}\ \text{sinc}^2\ (10^4 f)$ V^2/Hz. Find the mean value, mean square values, and the autocorrelation of the process.

2. (a) What is orthogonality? When two vectors are orthogonal. Give an example.
(b) Give the Gram-Schmitt procedure to find orthogonality.

3. (a) Compare the performance of QAM system with PSK system.
(b) Draw the block diagram of QPSK transmitter and explain working with the help of phasor diagram.

4. Discuss the procedure for designing an optimum receiver for carrier modulated signals when the carrier phase is unknown at the receiver when the input is binary sequence. Assume that the channel is AWGN.

5. a) What is Costas loop? With suitable sketches explain its operation.
b) What is the role of PLL in the phase estimation of PAM signals? Explain it with suitable diagram.

6. a) Derive the condition for Nyquist pulse for Zero ISI.
b) Explain an Equalizer operation using transversal filter of 2N+1 taps, where 'N' is an integer for removing the effect of the channel noise.

7. What are the properties that are to be satisfied for a valid maximal sequence? Give the block diagram to generate a 63 length M-sequence. Verify the properties for the generated sequence and justify your answer.

8. (a) Draw the block diagram of Tau-dither loop and explain the operation.
(b) What is matched filter? How this is used for PN sequences?

CODE No.:10MT13803

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

DIGITAL SYSTEM DESIGN

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Write HDL code for a 4:1 multiplexer using CASE statement and write the syntax of all the statements used in the program
b) Draw ASM chart and state diagram of a JK flip-flop .

2. a) Design square generator of a 4 bit binary input using ROM.
b) Distinguish between CPLDs and FPGAs.

3. a) Classify faults and briefly explain each of them.
b) Explain in detail path sensitization method of test generation with a suitable example.

4. a) How Random testing is better than deterministic testing method take an example and justify your answer.
b) Define (i) Singular cover (ii) Propagation D-cube (iii) Primitive D-cube of fault (iv) D-intersection.

5. a) Explain the terms (i) State identification (ii) Machine identification.
b) What is a successor free and explain its properties?
c) Define (i) Distinguishing sequence (ii) Homing sequence (iii) Synchronizing sequence.

6. a) State and explain Essential Prime Cube theorem with an example.
b) Tabulate the PLA programming table for the four boolean functions.
$A(x,y,z)=\sum(1,2,4,6)$,$B(x,y,z)=\sum(0,1,6,7)$,$C(x,y,z)=\sum(2,6)$, $D(x,y,z)=\sum(1,2,3,5.7)$.

7. Discuss various test generation algorithms for PLAs.

8. a) Find all races in the flow table shown and indicate those that are critical those that are not.
b) Find another assignment which contain no critical races.

y_1y_2	x_1x_2 state 00 01 11 10			
00	<u>00</u>	11	<u>00</u>	11
01	11	<u>01</u>	11	11
10	00	<u>10</u>	11	11
11	<u>11</u>	<u>11</u>	00	<u>11</u>

CODE No.:10MT13804

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

EMBEDDED SYSTEMS

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss in detail all the operating systems used in an Embedded Systems.
b) Explain clock circuitry and watch-dog timer/Reset circuitry in an Embedded System.

2. a) Explain the functions of memory devices on to an embedded computing platform.
b) Explain with neat schematic diagram, how to perform communication using 'IEEE 488 bus' in an embedded system.

3. a) Explain function queue scheduling architecture with suitable example.
b) Illustrate round robin architecture related to an embedded software development with an example.

4. a) Explain native tool chain.
b) Explain the goals of a typical testing process.

5. Explain in detail Tasks and Task scheduler.

6. Differentiate the advanced processor architectures (ARM and SHARC processors) with respect to their preliminaries and instruction sets.

7. a) Explain in detail successive refinement design methodology.
b) Explain the seven-step process of concurrent engineering application to telephone system.

8. Explain the design approach of an embedded system by considering an example of Telephone PBX, in detail.

CODE No.:10MT13805

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

MICROCOMPUTER SYSTEM DESIGN

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Compare the architecture of 8086 with its predecessors and bring out the advantages.
b) What are the various addressing modes of 8086?

2. a) Explain the various addressing modes of 80286.
b) How are the registers organized in 80286 ?

3. a) With a neat sketch, explain the pin diagram of 80386.
b) What is virtual mode?

4. How advanced is Pentium Pro over Pentium?

5. a) What are the special registers of P4 ?
b) Explain the architecture of Pentium 4.

6. a) Differentiate between polling and interrupts.
b) What is Block transfer w.r.t a DMA ?

7. a) How does virtual memory help in processing?
What are the limitations of virtual memory of 80286?
b) Explain the concept of sharing resources like memory, processor and data in multiprocessing system.

8. Discuss about the data formats for an arithmetic coprocessor.

CODE No.:10MT13808

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

LOW POWER VLSI DESIGN

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Give an overview of low-voltage and low-power VLSI design.
b) Write notes on Silicon-on-Insulator technology.

2. a) What is threshold voltage? What are various factors that influences threshold voltage?
b) Explain the principle of BICMOS inverter.

3. a) Discuss about lateral BJT on SOI.
b) Explain any one of the low-voltage or low-power deep submicron CMOS or BiCMOS processes.

4. a) Describe the dynamic characteristics of MOS transistor, using level 3 equations.
b) Describe the characteristics of Secondary MOS FET behavior.

5. a) Explain about SPICE level 3 model of MOSFET, with necessary equations.
b) Explain about EKV model and capacitance models of MOSFETS.

6. a) Explain about the optimization theme and performance themes of Latches.
b) What are the Quality Measures for Latches and Flip-Flops? Explain.

7. a) Give the design perspective for low-power latches and flip-flops by consider one from each logic circuit.
b) Discuss about quality measures for low-power latches and flip-flops.

8. Explain the following relevant to low-power VLSI special techniques.
(a) Low power techniques for SRAM.
(b) Power reduction in clock networks.

CODE No.:10MT10701

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

ADVANCED CONTROL SYSTEMS

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operation of Lead compensator. Derive its transfer function.
b) Write the procedure to design a lag compensator by using root locus technique.

2. Compensate the system with the open loop transfer function

$G_f(s) = \dfrac{k}{s(s+1)(s+5)}$; to meet the following specifications. Use Bode Plot technique.

Damping ratio: ζ=0.3; setting time: t_s=12 sec; velocity error constant: $k_v \geq 8s^{-1}$.

3. a) Explain the physical concept of controllability
b) Show that the pair {A:C} is completely observable for all values of α_i's:

$$A=\begin{bmatrix} 0 & 0 & 0\cdots 0 & -\alpha_n \\ 1 & 0 & 0\cdots 0 & -\alpha_{n-1} \\ 0 & 1 & 0\cdots 0 & -\alpha_{n-2} \\ \vdots & \vdots & \vdots & \\ 0 & 0 & 0\cdots 1 & \alpha_n \end{bmatrix} ; C = \begin{bmatrix} 0 & 0\cdots 0 & 1 \end{bmatrix}$$

4. a) Discuss the characteristics of non-linear systems.
b) Derive the describing function of a non-linear system with dead zone and saturation at the same time.

5. a) Determine the kind of singularity: $\ddot{y} + 5\dot{y} + 6y = 6$.
b) Give the general procedure to develop the phase trajectory of a given non linear system.

6. a) Explain the variable gradient method to generate Lyapunov's function.
b) Consider the system given as, $\dot{x}_1 = x_2$ and $\dot{x}_2 = -x_1 - x_2 + 2$.
Investigate the stability of the equilibrium state using the direct method of Lyapunov.

7. a) What are the design steps that are to be followed for the pole placement technique?
b) Consider the system defined by

$\dot{x} = Ax + Bu$

where $A=\begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -1 & 5 & -6 \end{bmatrix}$ and $B=\begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$

By using the state feedback control $u = -Kx$, it is desired to have the closed-loop poles at $s = -2 \pm j4$ and $s = -10$. Determine the state feedback gain matrix K.

8. a) Explain the constrained minimization problem.
b) Determine the optimal control law,

$$\dot{X} = \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} x + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u;\ y = \begin{bmatrix} 1 & 0 \\ 0 & 2 \end{bmatrix} x.$$

Such that the following performance Index is minimized $J = \int_0^\infty (y_1^2 + y_2^2 + u^2)dt.$

CODE No.:10MT10702

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

EHVAC TRANSMISSION

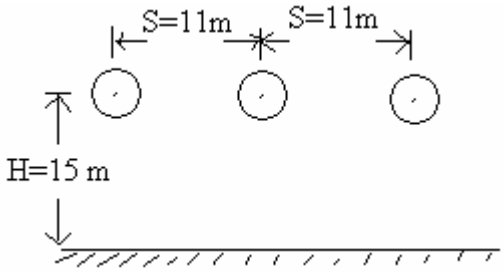
[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about standard transmission voltages.
b) Explain about Transmission line Trends.

2. The dimensions of the 3 - phase, 400 kV horizontal line shown in the figure are



H= 15m, S= 11m phase separation, Conductor is 2x3.18 cm diameter, Bundle spacing B=45.72 cm. Calculate the matrix of capacitances per Km for transposed and un transposed lines.

3. Derive the expressions for maximum surface voltage gradients of a 3 - phase AC line with horizontal configuration.

4. Explain Electrostatic Field of Single-Circuit 3-Phase Line.

5. Write short notes on:
(a) Series compensation.
(b) Ferranti effect.

6. Explain the phenomenon of Attenuation of traveling waves due to corona loss in detail.

7. Explain how will you measure the Radio interference voltage with neat block diagram.

8. Explain the design of EHV lines based on steady state and transient limits.

CODE No.:10MT10703

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

MICROPROCESSORS AND MICROCONTROLLERS

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the action taken by 8086 when INTR pin is activated.
b) Write an assembly language program in 8086 to search the largest data in an array.

2. a) Explain the importance & functioning of (i) ALE pin (ii) Mov ax, 004CH INT 21 H (iii) Mov ax,@ Data Mov DS, AX (iv) Min/Maxi pin. (v) DT/R (vi) INTR (vii) RESET (viii) TEST
b) Differentiate MIN&MAX mode.

3. a) Draw the interfacing diagram of a stepper motor with 8086 microprocessor using 8255. Explain, with the help of flow chat, how the speed of stepper motor can be controlled.
b) Write a program for the control of stepper motor given in (a).

4. a) Draw the internal block diagram of programmable communication interface 8251. Explain different modes of operation of 8251.
b) How 8251 can be interfaced with Intel 8086 microprocessor? Draw the diagram and explain how set of 100 byes can be transferred to memory using 8251.

5. a) Discuss various memory management features of Intel 80186 and 80286 processors.
b) What are differences between RISC and CSIC processors? Explain.

6. With a suitable block diagram, explain the architecture of 8051 microcontroller.

7. a) Explain the serial port and parallel port structure of Intel 8051 microcontroller.
b) Write an assembly language program to get the output 00h for 1msec and FF for 0.5 msec from port-0 of 8051 microcontroller.

8. a) Draw the interfacing diagram of analog to digital converter with 8051 micro controller. What are factors related to hardware on which the accuracy of conversion depend?
b) Write an assembly language program to get the digital equivalent of triangular wave input connected to input pin of ADC.

CODE No.:10MT10704

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

POWER SYSTEM CONTROL & STABILITY

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain the classical model of a single machine connected to an infinite bus with the help of neat diagrams. Also mention the assumption mode.

2. Discuss the modes of oscillation of an unregulated multi machine system.

3. What is Dynamic stability? Explain the effect of excitation on Dynamic stability.

4. a) What is the need of supplementary stabilizing signals? Explain.
b) Discuss briefly the block diagram of the linear system.

5. a) What are the various specifications of a typical excitation system?
b) Draw the functional block diagram representation of noncontinuously regulated excitation system and explain.

6. Draw and explain the type-4 system-non-continuous acting system with neat block diagram.

7. a) Explain Zubov's method and Popov's methods of stability.
b) Discuss the Lyapunov function for single machine connected to infinite bus.

8. What is Voltage stability? Briefly explain the factors effecting the voltage instability and collapse.

CODE No.:10MT10705

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

REACTIVE POWER COMPENSATION AND MANAGEMENT

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. (a) What are the specifications of load compensation?
(b) Illustrate the p.f correction and voltage regulation of practical load compensation with example.

2. (a) What are the various types of compensation? Explain.
(b) Explain the effect of passive shunt compensation on steady state reactive power compensation in overhead EHV lines.

3. Describe the following on the transient state reactive power in transmission lines with neat circuit diagrams
(a) Passive shunt compensation.
(b) Synchronous condenser compensation.

4. (a) What are objectives of reactive power coordination?
(b) Explain the consequences of over and under voltages in a power system.

5. (a) Illustrate the basic methods for load shaping with neat diagrams.
(b) What is meant by tariff? Explain best proposal for kVAr based tariff.

6. (a) What are the methods followed for distribution side reactive power management by the electricity boards in India? Explain them.
(b) Determine the optimal size of capacitor in distribution system for different types of load distribution.

7. What are the purposes of using capacitor at user side? Discuss them in details.

8. (a) Discuss the selection criteria of distribution transformer in railway supply.
(b) Explain the power factor of an arc furnace.

CODE No.:10MT10708

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

POWER QUALITY

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the significance of quality power in industrial scenario
b) Explain the terms voltage sag, voltage fluctuations, voltage harmonics and differentiate them.

2. a) Explain the cause of long interruptions.
b) What is reliability evaluation?

3. a) Explain how short interruptions are monitored.
b) What are the causes of short interruptions? Explain them briefly.

4. a) What are the causes of voltage sag? Explain them briefly.
b) Explain how voltage sag is calculated in non-sinusoidal systems.

5. a) Describe the different mitigation methods of AC drives to overcome power quality Disturbances.
b) What are the effects of voltage sag on the operation of induction motors?

6. a) Discuss the role of shunt controller in mitigating the power quality disturbances.
b) Describe the procedure to install mitigation equipment.

7. a) Distinguish between harmonics and transients.
b) How harmonics sources can be located?

8. a) What are the objectives of power quality monitoring?
b) Describe some of the permanent power quality monitoring equipments.

CODE No.:10MT12501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

ADVANCED DATA STRUCTURES AND ALGORITHMS

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Write an algorithm to insert an element in to double linked list.
b) Write a routine to convert infix to postfix expression.

2. What is the value returned by each of the following functions? Express your answer as functions of n. Also, state the worst-case running times in big-O notation.

a) Function mystery(n)

```
1.  r:=0;
2.  for i:=1 to n-1 do
3.      for j:=i+1 to n do
4.          for k:=1 to j do
5.              r:=r+1;
6.   return(r).
```

b) Function pensy(n)

```
1.  r:=0;
2.  for i:=1 to n-1 do
3.    for j:=1 to i do
4.       for  k:=j to i+j do
5.            r:=r+1;
6.  return ( r )
```

3. a) Show that the number of vertices with odd degrees is even in any undirected graph G.
b) Explain various operations which can be performed on a binary tree.

4. a) Explain Binary Search trees. What is the use of binary search tree?
b) Write the routines to the following on AVL Trees LL, RR, LR, RL rotations.

5. a) Explain splay trees and their usage.
b) What is hashing? What are the different hashing functions? What is the complexity of the hash table?

6. a) Write the control abstraction of Divide and Conquer technique and discuss the time complexity.
b) Explain Strassen's matrix multiplication and discuss its time complexity.

7. a) Define merging and purging rules of 0/1 Knapsack problem.
b) Write an algorithm for reliability design problem in a similar way to the algorithm for 0/1 Knapsack problem using Dynamic Programming.

8. a) Write Graph Colouring Algorithm to colour a graph of n vertices with m colours.
b) Explain the principles of FIFO and LC Branch & Bound.

CODE No.:10MT12502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

ADVANCED SOFTWARE ENGINEERING

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the essential characteristics of software engineering? How it is different from other engineering discipline?
b) If formal methods can demonstrate software correctness, why is it they are not widely used?

2. a) What is agile software development? How does it differ from more traditional process models?
b) Briefly explain the phases of unified process.
c) What is an XP "story"?

3. What is Risk driven specification? Explain with an example?

4. a) What are the characteristics of Component-based Software engineering?
b) What is aspect -oriented software engineering? How are separations of concerns supported in it?

5. Explain the criteria you would use to generate test cases for functional testing.

6. What is Aspect Oriented Software Engineering? How it streamlines the complex systems development without sacrificing flexibility and scalability?

7. a) What is the purpose of Software quality Assurance? Why should the quality Assurance organization be independent of development organization?
b) Explain how CMM encourages continuous improvement in software process.

8. Explain the steps to be followed in user interface design.

CODE No.:10MT12503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

MIDDLEWARE TECHNOLOGIES

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. (a) Write about various types of middleware.
(b) Describe the requirements of client/server systems.

2. (a) Explain connection oriented Programming
(b) Write about connectable objects.

3. What are the roles of architecture? Explain tiered component architecture in detail.

4. (a) Discuss about SOAP.
(b) Give a note on COM+ generalized context.

5. (a) How common type subsystem is used in building managed code? Discuss CTS types.
(b) Give a note on System Reflection.

6. (a) What do enterprise services provide? Explain ASP.NET enterprise service.
(b) Write about command objects.

7. Explain peer-to-peer computing concept and how JXTA achieves it.

8. What are CORBA Component Containers?

CODE No.:10MT12504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

SOFTWARE METRICS

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Discuss in detail about the scope of software metrics.

2. a) Explain in detail about the role of empirical relations in theory of measurement.
b) Explain
i). Ordinary Scale ii) Absolute Scale.

3. (a) Distinguish between validation and verification.
(b) Write short notes on cost and effort estimation.

4. Discuss in detail the role of data collection in software measurement.

5. a) Discuss in detail the relationship between requirements specification and complexity.
b) What is the role of Big - O notation in measuring the complexity? Explain with example.

6. a) Differentiate between McCabe's cyclomatic complexity measure and McCabe's essential complexity measure
b) Discuss in detail about internal reuse.

7. (a) What is a metrics plan?
(b) Explain CMM in detail?

8. a) Who is responsible for making the successful metrics? Explain them.
b) Write a short note on small measurements.

CODE No.:10MT12505

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

SOFTWARE REQUIREMENTS AND ESTIMATION

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain in detail about the Improving Requirements Processes.

2. Find a set of natural language requirements for the project like e-tendering system. Review the requirements to determine if there are any problems. For example, are they consistent? Ambiguous? Conflicting? Do they contain any design or implementation decisions? Which representation technique might help reveal and eliminate these problems? If the problems remain in the requirements, what is their likely impact as the system is designed and implemented?

3. Consider an "SMS" based e-voting system in which the voting process is based on the "Short Message Services"(SMS). Define the Features, Use cases and Requirements and also the Requirements Traceability Matrix for the "SMS" Based voting system.

4. Assume that you have been contracted by a university to develop an on-lone course registration system (OLCRS). Specify the characteristics of a good system and provide a set of preliminary requirements for the system. Using the estimation methods develop an effort estimate for OLCRS.

5. Is it possible to have a system that can automatically verify completeness of an SRS do Consider a project to develop a full-screen editor . The major components identified are (1). Screen edits, (2) Command language interpreter, (3) file input and output, (4) cursor movement and (5) screen movement. The sizes of these are estimated to be 4K, 2K, 1K, 2K and 3K delivered source code lines. For this project, determine the staff requirement for different phases and What are the average, maximum and minimum staff requirements. Explain your answer.

6. Define productivity. And explain various estimation factors briefly.

7. Explain the Use of Rational Requisite Pro tool in defining the software requirements. Explain how you generate the SRS document with this Tool in appropriate steps. Also define how Traceability matrix is linked with SRS documents.

8. Discuss about the importance of USC's COCOMO II in Software Estimation Tools.

CODE No.:10MT12508

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

VIRTUALIZATION AND CLOUD COMPUTING

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following terms:
   i. Software as a Service
   ii. Infrastructure as a Service
   iii. Platform as a Service
   b) Define Grid Computing. Give two Applications of Grid Computing and justify your answer.

2. Explain how virtualisation impacts the following:
   a) Super computing
   b) Grid computing
   c) Cloud computing
   Illustrate your answer with examples.

3. How parallel computing, grid computing, Cloud computing and super computing are differ each other? Illustrate your Answer with an example.

4. How do you improve performance through virtualization?

5. Write about benefits and limits of Could Computing?

6. Describe Cloud Computing Architecture.

7. How to plan disaster recovery and planning using clouds? Present a case study using Google App Engine.

8. Discuss the Amazon Cloud- A case study of cloud computing.

CODE No.:10MT15701

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

ANALOG IC DESIGN

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Derive an expression for g_m of an N-channel MOS FET operating in linear and saturation regions.

2. a) Explain common source amplifier with current mirror active load.
b) Explain why source/emitter follower circuits exhibits large amounts of overshoot and ringing.

3. a) Explain in detail the design and operation of Wilson current mirror.
b) Explain how the gain is improved in cascade current mirror compared to simple current mirror.

4. a) Discuss in detail the design features of fully differential folded cascade op amp.
b) Give an account of charge injection errors in connection with comparators and suggest a method to minimize the same.

5. a) What is CMFB circuit? What are various methods of designing CMFB circuits? Compare them.
b) Explain the principle of continuous time CMFB circuit.

6. a) Explain the operation of Bi-CMOS sample and Hold circuit with neat waveforms.
b) Briefly explain correlated double sampling techniques.

7. a) Explain the following in the context of data converters:
i) Resolution
ii) Offset and gain error
iii) Accuracy
iv) Differential non linearity error
v) Monotonicity
b) Explain briefly a 3 bit flash A/D converter. State the salient issues in designing flash A/D converters.

8. a) Explain in detail about Band pass over sampling converter.
b) Derive the component values of 1st order continuous time filter.

CODE No.:10MT15702

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

DIGITAL DESIGN MODELING AND SYNTHESIS WITH HDLS

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain various ways of describing a digital circuit by using HDL.
b) Describe with an example the top down design methodology.

2. a) Explain about User Defined Primitives (UDP) in verilog.
b) Explain the significance of Delay models in verilog with an example.

3. a) Explain the features and mechanisms of termination for loops.
b) Draw the generic structure of Mealy and Moore finite state machines and explain.

4. a) Write a Behavioral model in verilog for a positive edge triggered D flip flop. Also draw the synthesized schematic?
b) Explain about synthesis of Mealy type FSM (Finite State Machines) with an example.

5. a) What are the different types of CAD tools are available for the synthesis and explain?
b) Explain synthesis of case and conditional statement with an example.

6. a) Write the switch level description for a 2-input static CMOS exclusive or gate and explain.
b) Explain about the contention and resolution of signal strengths.

7. a) Explain about the "top down design methodology" with sub programs or functions.
b) Write VHDL code that finds the prime number in the given array.

8. a) Explain the significance of process statement with an example.
b) Explain about Medium Scale Integrated circuit (MSI) based design with an example.

CODE No.:10MT15703

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

DIGITAL IC DESIGN

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the switch model of static cmos inverter and write the important properties of it.
b) Derive the expression for dynamic power dissipation in cmos.

2. a) Explain how the monotonicity problem in dynamic circuits is overcome by domino logic.
b) Implement 3-input AND Gate using Domino Logic.

3. a) Draw the block schematic of a typical low power chip and explain each block in detail.
b) Explain various techniques used for reducing switched capacitances.

4. a) Explain carry-save multiplier and barrel shifter operation in detail.
b) Draw a 3T DRAM cell and explain its operation in detail.

5. a) Compare switching delays in BiCMOS and CMOS in detail.
b) Explain the operation of BiCMOS and BJT in detail and bring out the differences.

6. a) Explain well rules, contact rules and transistor rules in detail.
b) Explain in detail latch-up and its triggering and the preventive methods.

7. a) Explain how the resistance of an inverter is calculated with an example.
b) Draw the stick diagram and mask layout for an 8:1 NMOS inverter circuit. Both input and output points should be on poly-silicon layer.

8. a) Design a 4-bit shifter.
b) Explain a 4-bit serial - parallel multiplier with a neat diagram.

CODE No.:10MT15704

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

HARADWARE SOFTWARE CO-DESIGN

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Compare the merits and demerits in designing an embedded system using HW/SW Co-design flow and the conventional design flow.
b) Distinguish FSM and CFSM with necessary illustration.

2. How are define the objective function and closeness function for HW/SW partitioning ? Give example for each.

3. a) Explain the role of modern FPGAs in prototyping and emulation of an embedded system.
b) Distinguish the emulator from simulator.

4. a) Differentiate control and data dominated systems with their architectures.
b) Discuss about target architectures.

5. a) Explain any one of the modern embedded processor architecture with suitable diagram.
b) Discuss about practical consideration in a compiler development environment.

6. a) Draw co-design computational model for any embedded application and explain its significance.
b) Explain the importance of interfacing components in hardware software co-design.

7. a) System - level specification, design representation for system level synthesis, system level specification languages.
b) Explain the different abstraction levels.

8. Explain the co-simulation approaches with simple architecture:
(i) Detailed Processor Model.
(ii) Bus Model (Cycle based simulator).
(iii) Instruction Set Architecture Model.
(iv) Compiled Model.

CODE No.:10MT15705

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

VLSI TECHNOLOGY

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain the following in detail
   a) Photo Lithography
   b) Isotropic etching
   c) Preferential Etching..

2. a) Derive the drain current for non-saturated region of operation.
   b) Draw the Id vs VDS curve for NMOS and explain body effect.

3. Explain, How the different capacitances are estimated in the chip.

4. Explain the following in detail
   a) Pseudo NMOS Inverter
   b) C2MOS Logic.
   c) Dynamic Logic.

5. a) Why transistor sizing is important for the performance of a circuit? Explain with an adder carry chain example.
   b) How do you test a logic gate? Explain.

6. a) What is the difference between latch and flip-flop? Explain setup-time and hold-time.
   b) Explain briefly sequential system and clocking disciplines.

7. a) Explain the Switch-Box, Global & detailed Routing with diagrams.
   b) Explain SOCs & Embedded CPUs in brief.

8. a) What is placement? Explain the K-L algorithm.
   b) What is hardware-software co-design, co-simualtion & co-synthesis?

CODE No.:10MT15706

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2013

ASIC DESIGN

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is the difference between Standard cell ICs and ASICs? Explain the full-custom ASICs in detail.
b) Explain the architecture details of standard cell ASICs. Show its importance features.

2. a) Draw the basic PAL structure. And implement the following Boolean function on it.
$Z = ab + c + afd + aec$
b) How sequential and combinational circuits will be implemented on a given commercial PLDs? Explain with neat sketches.

3. a) Explain the various logic synthesis tools available for ASIC and FPGA based design.
b) Briefly explain about scan test.

4. a) Draw the gate array based ASIC structure. Explain.
b) What is standard cell? Explain the standard cell library features.

5. a) Describe the 4-1 multiplexer using Verilog or VHDL.
b) What are the 3-types of declaration in VHDL? How are they used? Give brief example for each.

6. a) Explain the types of simulations that are performed during chip design process.
b) What is fault simulation? Explain serial fault simulation.

7. a) State goals and objectives of placement.
b) Explain any one type of placement algorithm with example.

8. a) What is system partitioning? State the objectives of system partitioning.
b) What is circuit parasitic extraction? And explain how logic effort will be maintained during the chip design.

CODE No.:10MT10501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations December - 2013

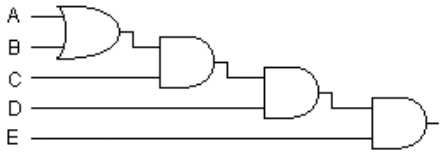
COMPUTER ARCHITECTURE

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the Boolean expression for the logic circuit shown below:



b) Obtain the Boolean SOP expression from the following truth table

Inputs			Output
A	B	C	X
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	0

2. a) Represent the number $(+46.5)_{10}$ as a floating point binary number with 24 bits. The normalized fraction mantissa has 16 bits and the exponent has 8 bits.

b) Perform the subtraction with the following unsigned binary numbers by taking the $2's$ of complement of the subtrahend (i) 11010 - 10000 (ii) 100 - 110000.

3. Use a 4-bit counter with parallel load and a 4-bit adder. Draw the block diagram that shows how to implement the following statements.

$x: R_1 \leftarrow R_1 + R_2$ add R_2 to R_1

$x'y: R_1 \leftarrow R_1 + 1$ increment R_1

Where R_1 is a counter with parallel load and R_2 is a 4-bit register.

4. a) Write a Booth's algorithm for binary multiplication and interpret same to an example -7 X 3.

b) State reasons for control hazards. And specify the techniques to handle control hazards in pipelining.

5. a) Explain design of control memory for micro programmed control unit.

b) Compare and contrast hardwired control unit and micro programmed control unit.

6. a) List the key characteristics of memories and explain each one of them with an example
b) A computer employs RAM chips of 1024 x 8 and ROM chips of 2048 x 4. The computer system needs 2K x 16 of RAM, and 4K x 16 of ROM and two interface units with 256 registers each. A memory-mapped I/O configuration is used. The two higher -order bits of the address bus are assigned 00 for RAM, 01 for ROM, and 10 for interface.

i. How many RAM and ROM chips are needed?
ii. Tell, how many lines of the address bus must be used to access total memory? How many of these lines will be common to all chips?
iii. Propose, the number of lines must be decoded for chip select? Specify the size of the decoder.
iv. Devise a memory-address map for the system and Give the address range in hexadecimal for RAM, ROM.
v. Design memory chip layout for that address map.

7. a) List various I/O techniques and explain any two in detail.
b) List various cache coherence protocols and explain any one in detail.

8. List various interconnection structures and explain any two in detail.

CODE No.:10MT10502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations December - 2013

DISCRETE STRUCTURES AND AUTOMATA THEORY

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is the importance of disjunctive normal form? Obtain the principal conjunctive and disjunctive normal forms of $(Q \rightarrow P) \wedge (\neg P \wedge Q)$.
b) What do you mean by sequent and theorem? Show that $P \vee Q$ follows from **P**.

2. a) Define the term Homomorphism. Let **({a,b},*)** be a semigroup where **a*a = b**, show that **a*b = b*a**.
b) Let **R** be a binary relation on the set of all positive integers such that $R = \{(a,b) \mid a = b^2\}$. Is R reflexive? Symmetric? Antisymmetric? Transitive? An Equivalent Relation? A partial order relation?

3. a) Solve the recurrence relation $a_r - a_{r-1} - a_{r-2} = 0$, given that $a_0=1$ and $a_1 = 1$.
b) In how many ways can the letters ***a***, ***b***, ***c***, ***d***, ***e***, ***f*** be arranged so that the letter ***b*** is always to the immediate left of the letter ***e*** ?

4. What is spanning tree? Explain any method to construct minimal spanning tree with example.

5. a) Give a Grammar for generating set of all string of the form $a^n b^m$, where $n, m \geq 1$. Derive the string a^3b^2 using the grammar.
b) Design a Finite State automaton which accepts string in **{0, 1}** such that every **0** has a **1** immediately to its right.

6. a) Design a Regular Grammar for generating set of strings from **{0,1}** where every string is beginning and ending with a **0**.
b) Show how Pumping Lemma can be used to determine whether the language defined by set of all strings of the form **a"b" (n>1)** is regular or not.

7. a) Define the terms leftmost derivation and rightmost derivation. Convert the context free grammar with production rules: $A \rightarrow BC, B \rightarrow CA \mid b, C \rightarrow AB \mid a$ to its equivalent **GNF**.
b) What do you mean by ambiguous grammar? Give an example of ambiguous grammar. How can the ambiguity be removed?

8. Name the accepter for each of the following languages - **recursively enumerable language**, **recursive language**, **context free language**, **regular language** and **unrestricted language**. How do you define **P** and **NP** problems using Turing Machine? Define **NP-hard** and **NP-complete** problems with an example of each type.

CODE No.:10MT10503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations December - 2013

DATA STRUCTURES AND ALGORITHMS

[Computer Science , Computer Networks and Information Security]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the concept of stack with an example. Also explain how a stack can be used in recursion.
b) Implement a single linked list with the following operations.
i) Count the no of nodes in the linked list.
ii) Add a node with a given value to the front of the list.
iii) Delete a node with a given value from the front of the list.

2. How to measure the efficiency of an algorithm? Explain with an example the different cases of complexity measurements.

3. What is a Graph? What are the different terminologies for a graph? Explain the different representation methods of a graph.

4. Define B-Tree. Explain various operations on B-Trees with example.

5. Define Red-Black Trees. Explain the deletion of an element into a Red-Black Tree.

6. Sort the following elements using Quick Sort by applying Divide and Conquer technique.
31, 28, 17, 65, 35, 42, 86, 25, 45, 52

7. a) Define reliability design problem in detail.
b) Apply dynamic programming to all pairs shortest path problem.

8. a) Explain the general method of branch and bound.
b) Write an algorithm to solve Knapsack problem with the branch and bound.

CODE No.:10MT10505

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations December - 2013

DATABASE MANAGEMENT SYSTEMS

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. (a) What are the main differences between FPS and DBMS? Explain their advantages and disadvantages with example.
(b) Construct ER diagram for a car insurance company with a set of customers, each of whom owns a number of cars, each car has a number of recorded accidents associated with it.

2. (a) What are Armstrong's inference rules for functional dependencies? Derive decomposition rule, union rule and pseudo-transitive rule by using only Armstrong's inference rules.
(b) Consider a relational schema R = {A,B,C,D,E,F,G,H,I,J}. Let the set of functional dependencies be F = { {A,B}→ {C}, {B,D} → {E,F}, {A,D} → {G,H}, {A} → {I}, {H}→ {J} }. Find all candidate keys for R. Decompose R into 2NF and then to 3NF.

3. (a) Consider the following relations in which the primary keys are underlined.
Employee (emp# ,name, skill, pay)
Position (position#, skill)
Duty allocation (position# emp#, date, shift)
Write the following queries in relational algebra?
(i) Get names of employees not assigned a duty
(ii) Get names of employee with highest pay
(iii) Get all pairs of employee with same skill
(b) Explain with example division operator in relational algebra. How does SQL implement in entity constraint and referential integrity constraint of relational data model. Explain with example.

4. (a) Let *Hostel = {Roll_no, Hostel_name, Room_no}, Student = {Roll_no, Student_name, Branch, Course, Year}*. Write SQL queries to find (i) List of vacant rooms in each *Hostel* in the format *<Hostel_name, Room_no>* (ii) List of students who are room-mates to the student with Roll_no = '10CSM520' and who are studying in 2nd *Year* B.Tech *Course*.
(b) Consider the above given *Hostel* and *Student* relation schema. Write PL/SQL code to find a relation with schema *<Hostel_name, Room_no>* for rooms which are occupied by exactly 2 students who are class-mates (Note, two students studying in same *Branch*, same *Course* and same *Year* are considered to be class-mates).

5. (a) Explain distinction between closed and open hashing and discuss the relative merits of each technique in database application.
(b) What is the main problem in indexing a nonunique attribute using B+ tree? How do you resolve this problem?

6. (a) Let the transactions T1, T2, T3 are defined to perform the following operations.

T1: add 50 to A
T2: double A
T3: add B to A

Suppose transactions T1, T2, T3 are allowed to execute concurrently, if initial values of A and B are 100 and 25, how many possible correct results are there? Enumerate each of these.

(b) Compare deferred and immediate modification versions of the log based recovery scheme in terms of ease of implementation and overhead cost.

7. (a) What are the main reasons for potential advantages of distributed databases?

(b) What is fragment of a relation? What are the main types of fragments? Why fragmentation concept is useful in distributed database design?

8. (a) How do spatial databases differ from regular databases? Discuss different categories of spatial queries. Also explain different types of multimedia databases

(b) What are the differences among immediate, deferred and detached consideration and execution of active rule conditions?

CODE No.:10MT10701

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations December - 2013

ADVANCED CONTROL SYSTEMS

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is a PID controller? Derive expressions for K_p, K_i and K_d in time domain approach.

b) A unity feedback control system has an open-loop transfer function of $G(s) = \frac{K}{s(s+1)}$.
Design a lead compensator to meet the following specifications: i) Damping ratio $\xi = 0.7$,
ii) Settling time, $t_s = 1.4$ sec and iii) Velocity error constant, $Kv = 2$ sec^{-1}.

2. Design a lead compensator for the system with an open loop transfer function:
$G_f(s) = \frac{K}{s^2(1+0.1s)}$ for the specifications of $K_a = 10$ and $\phi_M = 30^\circ$ use frequency response technique.

3. a) Derive the conditions for complete observability of continuous-time systems if state matrix has non-distinct eigen values.

b) Consider the system defined by

$$\dot{x} = Ax + Bu$$
$$y = Cxy = Cx$$

where $A=\begin{bmatrix}2 & 0 & 0\\ 0 & 2 & 0\\ 0 & 3 & 1\end{bmatrix}$, $B=\begin{bmatrix}0 & 1\\ 1 & 0\\ 0 & 1\end{bmatrix}$ and $C=\begin{bmatrix}1 & 0 & 0\\ 0 & 1 & 0\end{bmatrix}$

Is the system completely state controllable and completely observable?

4. a) Explain about jump resonance, limit cycles and frequency entertainment.

b) Derive the describing function of a non-linear system with Dead zone and saturation non-linearity.

5. a) Explain about the construction of Phase Trajectories by Delta method.

b) Determine the type of singularity of the system $\ddot{x} + 5\dot{x} + 6x = 6$ and find the singular points on the phase plane.

6. a) Explain about the limit cycle behavior of nonlinear systems.

b) Consider a nonlinear system described by the equations

$$\dot{x}_1 = -3x_1 + x_2$$
$$\dot{x}_2 = x_1 - x_2 - x_2^3$$

Investigate the stability of equilibrium state using Kravovskii's method.

7. a) Write about state observers.

b) Consider the system defined by

$$\dot{x} = Ax + Bu$$

where $A=\begin{bmatrix}0 & 1 & 0\\ 0 & 0 & 1\\ -1 & 5 & -6\end{bmatrix}$ and $B=\begin{bmatrix}0\\ 0\\ 1\end{bmatrix}$

By using the state feedback control $u = -Kx$, it is desired to have the closed-loop poles at $s = -2 \pm j4$ and $s = -10$. Determine the state feedback gain matrix K using Ackermann's method.

8. a) What is the significance of Bourday conditions in the calculus of variations?

b) Consider the plant $\dot{x} = \begin{bmatrix}-1 & 0\\ 1 & 0\end{bmatrix}x + \begin{bmatrix}1\\ 0\end{bmatrix}u;$

with the performance Index $J = \int_0^\alpha (x_1^2 + u^2)dt$

Test whether an asymptotically state optimal solution exists for this control problem.

CODE No.:10MT10703

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC10) Supplementary Examinations December - 2013

MICROPROCESSORS AND MICROCONTROLLERS

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Draw & explain maxi mode of 8086.
b) Write functions of ALE pin.

2. a) Discuss the various addressing modes of 80396 microprocessor.
b) Explain the following assembler directives used in 8086
(i) ASSUME
(ii) EQU
(iii) DW (8).

3. a) Explain in detail about memory access mechanism in 8086.
b) Explain the function of following 8086 signals.
(i) HLDA
(ii) RQ/GTO
(iii) DEN
(iv) ALE.

4. a) Draw & Explain the block diagram of 8259 PIC.
b) Write the initialization instruction for 8259 PIC for the following Specifications:
(i) Interrupt type 32 (ii) Edge triggered, single and ICW4 needed.

5. a) What are salient features of RISC processors? How these are different from CISC processors? Explain.
b) What is memory paging? How this is implemented in 80286 processor?

6. a) Explain following addressing modes of Intel 8051 micro controller:
(i) Register indirect with displacement
(ii) Direct memory addressing
b) Explain different ways of organizing memory in Intel 8051 and also 8051 with external memory.

7. What are the different addressing modes of 8051 microcontroller and give two examples for each addressing mode?

8. List out the SFRs required to program timers of 8051. What are the different modes of operations of these timers?

CODE No.:10MT13802

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations December - 2013

DIGITAL COMMUNICATION TECHNIQUES

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss about the correlation and covariance matrix of a wide sense stationary process.
b) A stationary white noise process having a spectral density of N/2 = 0.01 V^2/Hz is passed through an RC low pass filter having a time constant of 1ms. Find the rms value of the filter output.

2. Use signal space diagram to represent the following digital modulated signals: (i) PAM, (ii) PSK (iii) QAM. Give closed form expressions to these signals and discuss how they are obtained.

3. (a) Draw the block diagram of DPSK modulator and explain the working mechanism.
(b) Discuss the probability of error in BPSK system.

4. (a) What is a matched filter? Derive an expression for the impulse response of matched filter.
(b) Show that the output (maximum) SNR of matched filter is

$$\frac{2E}{No}.$$

5. (a) How the signal can be estimated in the presence of noise? What are different techniques available?
(b) Discuss about likelihood function.

6. a) With the help of block diagram, explain the working principle of Decision Feedback Equalizer in handling the channel effects and (or) ISI.
b) Discuss about the optimization of transversal filter coefficients using any algorithm.

7. (a) Define the terms processing gain and jamming margin.
(b) Explain some applications of DS spread spectrum signals.

8. Write the following:
a) Tau-Dither loop.
b) Matched filter for PN sequence.

CODE No.:10MT13803

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations December - 2013

DIGITAL SYSTEM DESIGN

[Digital Electronics and Communication Systems]

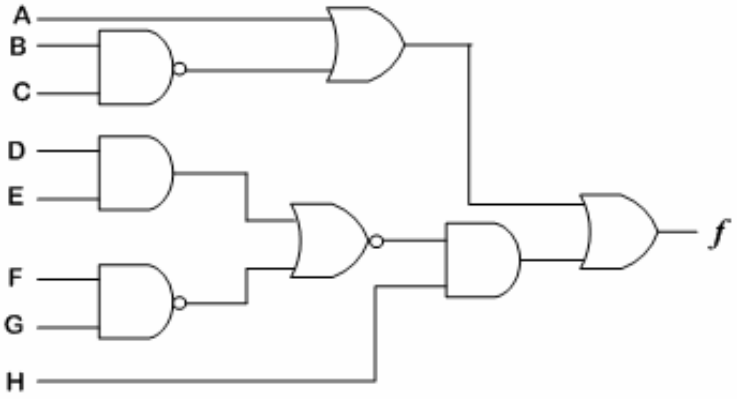
Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Draw an ASM chart and state table for a 2 bit up-down counter having mode control input
M = 1; Up counting
M = 0; Down counting
The circuit should generate an output 1 whenever the count becomes minimum or maximum. Design the control circuit.
b) Define (i) state box (ii) conditional output box and (iii) decision box in an ASM chart.

2. a) Write the procedure for the design of an iterative circuit and draw a block schematic of a 4-bit full adder using 1-bit full adder.
b) Design a sequence detector to detect 01101 sequence(overlapping) and implement on a PLA.

3. a) For the given circuit what are the single faults and equivalent faults where test = 01111111 is applied. Also find minimal adaptive experiment to distinguish the non equivalent faults.



b) Write a brief note on Fault model in digital circuits.

4. a) How Random testing is better than deterministic testing method take an example and justify your answer.
b) Define (i) Singular cover (ii) Propagation D-cube (iii) Primitive D-cube of fault (iv) D-intersection.

5. a) Explain in brief the steps involved in diagnosing a sequential machine.
b) Consider the following state table of a machine M, construct an entire preset checking experiment.

P.S	N.S. , Z	
	X=0	X=1
A	B,0	A,1
B	C,0	A,1
C	A,1	B,0

6. Apply IISC algorithm and minimize the given PLA output function.

f = 2001 + 2020 + 1200 + 2211.

7. a) Explain, why traditional TG methods cannot be used for PLAs?
b) Prove that a missing cross point fault is equivalent to some stuck- at fault in the sum-of-products representation of a PLA.

8. Write a short notes on
(a) Merger graphs (b) Flow table

CODE No.:10MT13804

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC10) Supplementary Examinations December - 2013

EMBEDDED SYSTEMS

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the layered architecture of an Embedded Systems.
b) Explain various processor architectures like von Neumann, Harvard and Super Harvard architectures.

2. a) With a suitable diagram, explain how component interfacing will be performed in an embedded computing platform.
b) Explain with a neat schematic diagram, how to perform communication using 'UART' in an embedded system.

3. Explain function queue scheduler analysis with a suitable example.

4. a) Explain the tool chain for building embedded software.
b) Explain instruction set simulator.

5. a) Explain the terms “semaphores and queues” relevant to RTOS in an embedded system.
b) List the various available RTOS and explain any one of them in brief.

6. a) Explain the format of ARM data processing instructions.
b) Explain the basic ARM programming model.
c) Write ARM assembly code to implement

7. a) Present the requirement analysis for an embedded system design.
b) Write notes on embedded system analysis and architecture design issues.

8. Explain the design approach of an embedded system by considering an example of Telephone PBX, in detail.

CODE No.:10MT13805

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC10) Supplementary Examinations December - 2013

MICROCOMPUTER SYSTEM DESIGN

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between 8086 and 8088 pin diagrams.
b) What is meant by an addressing mode? Support with examples.

2. a) Explain in detail the register organization of 80286.
b) Explain how CALL gate helps in executing multiple levels of task with privilege in 80286.
c) Explain the following instructions of 80286
(i) LGDT / SGDT (ii) LAR (iii) VERR.

3. a) What is memory management?
b) What is paging? Why is it necessary?

4. a) Bring out the architectural difference between 80486 and Pentium.
b) Explain Branch prediction. How does it enhance the speed of execution?

5. Draw and discuss about the architecture of P4.

6. Write an initialization program to transfer 1k byte of data from I/O device to memory location starting from A5B0H. Use channel 3 of DMA. The address of channel 0 DAM is 80H.

7. a) Explain process management.
b) What is a Semaphore?

8. Explain in detail, the internal structure of 8087.

CODE No.:10MT13808

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC10) Supplementary Examinations December - 2013

LOW POWER VLSI DESIGN

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the importance of low-voltage and low-power VLSI design. Why CMOS/BiCMOS logic can be used for this design?
b) Give the limitations of low-power VLSI design and write a short note on Silicon-on-Insulator technology.

2. a) What are the different BiCMOS processes? Explain any one of them with suitable diagrams.
b) Explain the integration and isolation considerations of BiCMOS processes.

3. a) Explain SOI based CMOS processes for low-voltage or low-power VLSI design.
b) Present one of the low-voltage or low-power deep submicron CMOS or BiCMOS processes.

4. a) Describe the dynamic characteristics of MOS transistor, using level 3 equations.
b) Describe the characteristics of Secondary MOS FET behavior.

5. a) Explain about the features of high performance LVLP; CMOST device.
b) Give the process sequence of SOI lateral BJT and give the typical values of Device parameters.

6. a) List the advanced BiCMOS digital circuits that are required for low-voltage low-power VLSI design. Explain any one of them with its operation.
b) Discuss about ESD-free BiCMOS logic circuit and give the comparative evaluation of low-voltage low-power logic circuits.

7. Explain about the Functionality Theme and Synchronous themes of latches and Flip - Flops.

8. Write notes on any TWO
a) MOSFET in a Hybrid - mode environment.
b) ESD-free Bi CMOS .
c) Bipolar SPICE Model.

CODE No.:10MT15703

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC10) Supplementary Examinations December - 2013

DIGITAL IC DESIGN

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the effect of Wp and Wn on switching threshold.
b) Explain the effect of technology scaling on inverter metrics.

2. a) Draw the schematic of NORA logic and explain different phases of operation in detail.
b) Design a logic that compares two 4-bit words using domino CMOS gates.

3. a) Draw the block schematic of a typical low power chip and explain each block in detail.
b) Explain various techniques used for reducing switched capacitances.

4. a) Implement a 3-bit Multiplier using Complementary static CMOS
b) Explain possible ways of reducing static and dynamic dissipation in CMOS design.

5. a) List out the advantages of BiCMOS structures over other devices
b) Explain the operation of the conventional BiCMOS inverter with suitable diagrams.

6. Design a minimum transistor CMOS circuit for the expression $F = \overline{(b+d).(b+c)(a+d)}$ and draw the layout diagram.

7. a) Explain the need of the design rules.
b) Explain about the Mead Conway Design rules for NMOS process.

8. a) Explain the design of a 4-bit arithmetic processor.
b) Explain modified Booth's algorithm and give its implementation.

CODE No.:10MT16303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations December - 2013

NETWORK MANAGEMENT SYSTEMS

[Computer Networks and Information Security]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail about Communication Protocols and Standards.
b) Explain Goals of Network Management Systems.

2. Explain in detail Communication and Functional Models.

3. Write short notes on:
a) Internet Organization and Standards.
b) SNMP Models.

4. Explain in detail about SNMPv2 Structure of Management Information.

5. a) Explain key features of SNMPv3.
b) Write short notes on SNMPv3 Access Control.

6. a) Explain in detail about RMON1.
b) Explain in detail about RMON SM1 and MIB.

7. Write short notes on:
a) TNM Conceptual Model.
b) TNM Standards.

8. a) Briefly explain Reliable and fault Tolerant Network Management.
b) Write a short note on Distributed Network Management.

CODE No.:10MT20301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

BIOREACTOR ENGINEERING

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss various types of bioreactors.
a) Discuss product and substrate inhibition in bioreactors.

2. a) Develop the design equations of a batch bioreactor and chemostat.
b) What are the factors to be considered in the design of bubble coulmns? Explain.

3. a) Discuss the factors influencing the K_La in bioreactors.
b) Explain the different resistances involved in transfer of oxygen from bulk gas phase to cell.

4. a) Discuss the power requirement for mixing in aerated and non aerated tanks with Newtonian and non-Newtonian fluids.
b) Write short notes on Mixing time in Multiphase bioreactors and in agitated reactor.

5. a) Explain different correlations for K_La involving Newtonian and Non-Newtonian liquids.
b) Define Power number and explain how power number varies as a function of Reynolds number in bioreactor for Newtonian and Non-Newtonian fluids.

6. a) Explain the different ways by which plant and animal cell cultures get damaged in bioreactors.
b) What are off centered impellers and baffles? Explain its function.

7. Explain online and offline monitoring of bioreactors.

8. a) Explain the operation of the pH and O_2 electrodes with schematic diagrams.
b) Write short notes on online sensors for cell properties and CO_2 electrode in bioreactor.

CODE No.:10MT20302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

GENETIC ENGINEERING

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What is the codon optimization? Describe the criteria that you consider for over expression of a gene of interest.

2. Write short notes on any two.
a) Transgenic chicken b) TDNA in Ti plasmid c) Recombinant insulin.

3. Give an account of the principles and procedures for the purification of Nucleic acids.

4. Discuss the salient features of prokaryotic cloning vectors.

5. Discuss the construction of C-DNA libraries. How do they differ from genomic libraries?

6. Explain the principles and experimental procedures of Northern blotting.

7. Name three different techniques for studying protein-protein interactions and describe in detail about the yeast two hybrid system.

8. Write short notes on any two of the following.
a) Gene editing.
b) T-DNA.
c) Gene therapy.

CODE No.:10MT20303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

BIOSEPARATION PROCESSES

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What is up stream and down stream processing? Explain criteria for selection of bio-separation techniques.

2. Describe the different methods of cell disruption along with advantages and disadvantages.

3. Write short notes on :
   a) Filtration.
   b) Centrifugation.
   c) Flocculation.

4. Explain about single effect evaporation and describe its steam economy.

5. What is membrane separation process and write about basic principles involved in it.

6. What are different extraction processes? Discuss in detail.

7. Define chromatography. Give a brief account on Electrophoresis.

8. What is the principle of extraction? Explain crystallization equipment.

CODE No.:10MT20304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

CELL TECHNOLOGY

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is tissue culture?
b) Write the major differences between organ culture and cell culture.
c) Why cell culture is not a true representation of the *in vivo* system?
d) What are the major advantages and disadvantages of plant tissue culture?

2. a) What are the precautions followed when performing cull culture experiments with laminar flow hood?
b) Why inverted microscope is used to observe the cells?
c) What are cell counters and write two advantages?
d) Briefly explain about CO_2 incubator.

3. Short notes on :
a) Media.
b) Composition of an animal and plant culture medium.
c) Types of media with their advantages and disadvantages.

4. What is a cell line? Explain the process of generating cell lines.

5. Write briefly on:
a) Synchronization. How will you synchronize a given cell and what are its uses?
b) Isolation of stem cells.

6. Write about the different equipment used in cell quantification.

7. What is RNA silencing? Explain the mechanism involved with a diagram and also the limitations.

8. Explain the steps involved in the transformation of cells.

CODE No.:10MT20305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

BIOINFORMATICS

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Describe any one DNA sequence database.

2. Explain identification of coding regions using Bioinformatics tools.

3. Define Small nuclear RNA, write their importance and applications in DNA or protein sequence alignments.

4. Explain multiple sequence alignment.

5. Write short notes on
   a) Motifs.
   b) Domains.

6. What is threading? Write a note on methodology and applications of *Ab initio* for protein structure prediction.

7. Write any 3 of the following
   a. PHRED
   b. Vector masking
   c. PHRAP
   d. CAP3

8. What is QSAR? How does it help to predict activity for new compound in drug designing?

CODE No.:10MT20306

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

ADVANCED IMMUNOTECHNOLOGY

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. How does an attenuated vaccine differ from a live vaccine? What are protein based vaccines? Name the adjuvants used in human prophylactic vaccines. What are the difficulties in the development of plant based vaccines?

2. What is an antigen? How is it presented to lymphocytes? How does a T-Cell get activated?

3. What is an immunological memory? How does the T-Cell memory differ from B-Cell memory? Elaborate on the cellular machinery to protect the host organism using immunological memory from recurrent infections.

4. Describe the mechanism of adjuvants. Write an account on plant based adjuvants.

5. What are monoclonal antibodies? Describe the procedure. Mention their applications.

6. How does a tumor cell differ from a normal healthy cell? What are tumor antigens? Indicate the role of NK cells in combating tumor cells.

7. Explain the technique of Hybridoma technology. Elaborate its applications.

8. Write an account on immunodiffusion. Mention the detailed procedure. What do you observe at the end of immunodiffusion experiment? How do you conclude the results? Explain the same through a hypothetical example.

CODE No.:10MT20501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

COMPUTER NETWORKS

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Compare packet switching and circuit switching.
b) Explain in detail the three categories of access networks.

2. a) An organization is granted the block 213.56.180.0/24**.** The administrator wants to create 32 subnets.
i) Find the subnet mask and subnet address.
ii) Find the number of addresses in each subnet.
iii) Find the first and last addresses in the first subnet.
iv) Find the first and last addresses in the last subnet.
b) Briefly describe the header content of IPv4 with a neat sketch.

3. What is SIP? Explain the messages OPTIONS, CANCEL and REGISTER

4. What are the three phases in TCP connection? Explain in detail.

5. a) Discuss how a network manager designs subnets for his company.
b) A company is granted the site address 201.70.64.0 (Class C). The company needs six subnets. Design the subnets.

6. An IP datagram has arrived with the following information in the header (in hexadecimal):
45 00 00 54 00 03 00 00 20 06 00 00 7C 4E 03 02 B4 0E 0F 02
a) Are there any options?
b) Is this packet fragmented?
c) What is the size of the data?
d) How many more routers can the packet travel to?
e) Is a checksum used?
f) What is the identification number of the packet?

7. a) Give a overview of optical networks.
b) Describe an All-optical switch.

8. Give an example for intra domain routing protocol that uses the link state routing algorithm. Also explain the packet header, message types and operations of that protocol.

CODE No.:10MT20502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

DATA WAREHOUSING AND DATA MINING

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Define data mining as a process of knowledge discovery.
b) Give the architecture of typical data mining system.

2. a) Describe various methods to fill in missing values.
b) Explain any 4 methods for numeric concept hierarchy generation.

3. a) Distinguish ROLAP, MOLAP and HOLAP.
b) Explain the 3-tier architecture of data warehouse.

4. a) Explain Apriori algorithm with an example.
b) Discuss the issues related to association rule mining.

5. Discuss in detail about
i) Bayesian classification.
ii) Linear and Multiple regression.

6. a) What are the different types of data used in Cluster Analysis?
b) Explain about partitioning methods in Cluster Analysis.

7. Explain about Mining Sequence Patterns.

8. a) Write short notes on spatial data mining.
b) Explain various text retrieval methods.

CODE No.:10MT20503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

JAVA AND WEB TECHNOLOGIES

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Differentiate the following :
   a) Overloading Vs Overriding.
   b) Classes Vs Abstract Classes.
   c) Classes Vs Constructors.

2. Discuss about following:
   a) Buttons.
   b) Labels &Text boxes.

3. Explain how to include internal and external style sheets in a HTML web page with example.

4. a) Explain DTD declaration with example.
   b) Compare XML Schemas Over DTDs.

5. a) What is java bean? What are the advantages of java beans?
   b) Explain Simple, Indexed properties of java bean with simple example.

6. a) Describe about the life cycle of servlet.
   b) Write a servlet code which can read parameters from a web page.

7. a) How can you generate dynamic content using scripting elements?
   b) Explain about the various memory usage considerations.

8. Explain important classes and interfaces of java.sql package.

CODE No.:10MT20504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about object identity.
b) Discuss about the artifacts of software intensive system.

2. a) Explain about classifiers, scope and visibility.
b) Explain about advanced relationships.

3. a) Consider modeling a railway reservation system. Consider the use case "specify ticket details" and draw a sequence diagram . Explain briefly.
b) Enumerate the steps to model flow of control by organization. Give an example collaboration diagram.

4. a) Explain about activity diagram.
b) Explain about process, thread and synchronization.

5. a) Enumerate the steps to model the following
i. Tables, files and documents
ii. API
iii. Source code
b) Draw the activity diagram for the two flow elevator simulator and explain.

6. a) Explain about iterative incremental development.
b) Iterative approach is risk driven justify your statement.

7. a) Write about archetypal inception phase.
b) What are the requirements for testing?

8. a) Explain about archetypal construction iteration workflow.
b) Explain about activities in transition phase.

CODE No.:10MT20505

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

OPERATING SYSTEMS

[Computer Science, Computer Networks and Information Security]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the Operating system as Resource Manager.
b) A major operating system will evolve over time for a number of reasons. What are they?

2. a) How do you represent a process?
b) What is the difference between thread and process? How thread scheduling is done.

3. Explain in detail all the steps involved in getting a Dekker's algorithm.

4. What are the necessary conditions for Deadlock? How deadlocks can be prevented.

5. Consider a memory management system with demand paging. There are there processes P1, P2, P3 which have one page of private memory each. Moreover P1 and P2 are sharing an array A which fits entirely into one memory page. Similarly, P2 and P3 are sharing an array B, which fits into a memory page.
a) Let all the data for the processes be located into physical memory. Draw a possible memory allocation diagram, give the page tables for the three processes.
b) Assume that process P1 gets swapped out of memory entirely. How are the page tables changing?
c) Assume that process P1 gets swapped back into memory. Give the page tables in this situation.

6. a) How files are organized in LINUX.
b) What are the scheduling techniques in LINUX?

7. a) What do you understand by a file directory?
b) Explain briefly the information elements of a file directory
c) Explain, what is tree-structured directory?

8. Explain various strategies used to handle deadlocks in distributed systems.

CODE No.:10MT20506

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

CLOUD COMPUTING

[Computer Science , Computer Networks and Information Security]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What are the various cloud service models? Illustrate with diagrams and examples how these models work.

2. a) Enlist and explain the secure cloud software requirements.
b) Illustrate with the help of a diagram, various approaches to cloud software requirements. Also explain the additions to software requirements engineering process to promote secure software.

3. a) What are the criteria based on which services should be moved on to the cloud?
b) What are concerns which we need express to our cloud service provider?
c) When should we use a public, private or hybrid cloud?

4. Explain the different standards for application developers in cloud platform with suitable examples for each.

5. a) Briefly explain how the risk management and risk assessment is taken care in clouds.
b) Explain the design of security architecture for cloud computing.

6. Discuss cloud service development in terms of offerings by Amazon, Google App Engine, IBM and Salesforce.com. Explain the service model used in each of these cases.

7. Cloud is a way to collaborate online. Discuss other ways to collaborate online like web-based communication tools, groupware and social networking. Compare the technologies.

8. a) Statelessness is crucial for scalability and fault tolerance in cloud. How do we design for statelessness in the cloud?
b) What are the issues involved in integrating legacy applications with cloud services?

CODE No.:10MT20701

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

ECONOMIC OPERATION AND CONTROL OF POWER SYSTEM

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is the need of unit commitment in economical load dispatch?
b) Explain the base point and participation factors in economic dispatch problems.

2. a) Explain how unit commitment problem is solved using priority list method.
b) Discuss about reliability considerations in unit commitment problem.

3. a) Explain about pumped storage plants.
b) Discuss about the mathematic formulation of hydro thermal scheduling problem.

4. Explain with neat diagram how both load frequency control and economic dispatch control are executed on a two area power system.

5. a) Discuss inter utility energy evaluation.
b) What are the merits and demerits of power pools in interchange of power and energy?

6. a) Explain the necessity of load flow studies.
b) Draw the flow chart for Newton-Raphson method when PV buses are present.

7. a) Explain the algorithm for contingency analysis using linear sensitivity factors.
b) Discuss about various AC power flow methods.

8. a) Discuss about linear programming methods.
b) Explain about security constrained optimal power flow.

CODE No.:10MT20702

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

FACTS CONTROLLERS

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the different types of modeling methods of FACTS devices?
b) Explain the factors that limits the loading capability.

2. a) Explain the concept of Fundamental and Harmonic voltages for a Three-Level Voltage Sourced Converters.
b) Explain the operation of Pulse Width Modulation (PWM) Converter.

3. Derive fundamental and harmonic voltages for a three level converter and draw its waveforms.

4. a) Explain the basic operation of rotating synchronous compensator.
b) Explain different types of Hybrid VAR generators with their characteristics.

5. a) Explain the operation of STATCOM in an aid of block diagram.
b) Describe the V-I characteristics of STATCOM.

6. a) Explain the modeling procedure of UPFC for power flow studies.
b) What are the various recent advancements in the UPFC design?

7. Explain the various control attributes for different FACTS controllers.

8. Describe in detail the power flow control co-ordination of FACTS.

CODE No.:10MT20703

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

HVDC TRANSMISSION

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Compare monopolar DC line with single-phase AC line with regarded to power transfer capability. Assume same conductor size and system maximum voltage.
b) Describe the limitations of HVDC transmission lines.

2. a) With a circuit diagram and wave forms, explain the operation and derive the output voltage expression of a 6-pulse converter.
b) Describe the various components of a converter station.

3. a) Describe the different methods of harmonic elimination in HVDC systems.
b) What are the different types of filters used on the AC side of an HVDC system?

4. a) Explain the necessity of VDCOL control used in HVDC systems.
b) Explain pulse phase control using voltage controlled oscillator.

5. a) Explain the various sources of reactive power.
b) Write short notes on DC Power modulation in HVDC System.

6. a) Explain the various types of MTDC Systems.
b) Comparison of series and parallel MTDC Systems.

7. a) Discuss about voltage interaction between HVDC and HVAC systems.
b) Explain the remedial measures for instability in HVDC -AC systems.

8. a) What are the causes of over voltages due to disturbance on a DC Side.
b) Briefly explain commutation failure in HVDC Systems.

CODE No.:10MT20704

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

POWER SYSTEM RELIABILITY

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Define the following with examples.
(i) Continuous random variable and (ii) Discrete random variable
b) Plot hazard rate, reliability and failure density as function of time for Normal and Log-normal distributions.

2. a) Define failure density and hazard rate. Derive the relation between them.
b) The failure PDF for an appliance is assumed to be a normal distribution with μ = 5 yrs. and σ = 0.8 yr. Set the design life for a reliability of 99 % and also obtain the reliability at 4 yrs.

3. a) What do you mean by high level and low level redundancies? Obtain the expressions for reliability.
b) Determine which of the following systems is the most reliable at 100 hr. and also compute their MTTFs.
(i) Two parallel and constant failure rate units with $\lambda_1 = 0.0034$ and $\lambda_2 = 0.0105$
(ii) A standby system with $\lambda_1 = 0.0034$ and $\lambda_2 = 0.0105$ and a switching failure probability of 15%.

4. a) Draw and explain state-space diagram of single repairable component with partial output state.
b) The following stochastic transitional probability matrix *P* shows the transition rates per hour of a continuous Markov process. Construct the state-space diagram and evaluate the MTTF given that the system starts in state 1.

$$P = \begin{array}{c} \\ 1 \\ 2 \\ 3 \end{array} \begin{array}{c} \begin{array}{ccc} 1 & 2 & 3 \end{array} \\ \begin{bmatrix} 0.90 & 0.05 & 0.05 \\ 0 & 0.95 & 0.05 \\ 0 & 0 & 1 \end{bmatrix} \end{array}$$

5. A four unit hydro plant serves a remote load through two transmission lines. The four hydro units are connected to a single step-up transformer which is then connected to the two lines. The remote load has a daily peak load variation curve which is a straight line from the 100% to the 60% point. Calculate the annual loss of load expectation for a forecast peak of 70 MW using the following data.

Hydro units
25 MW. Forced outage rate = **2%**
Transformer
110 MVA. Forced outage rate = **0.2%**
Transmission lines
Carrying capability 50 MW each line
Failure rate = **2** f/year
Average repair time = **24** hours

6. a) Explain the evaluation of equivalent transition rates for two component repairable model with identical components.
b) Explain the evaluation of non-equivalent transition rates for two component repairable model with identical components.
c) A generating plant containing three identical 40 MW generating units is connected to a constant 82 MW load. The unit failure and average repair times are 3 f/yr and 8 days respectively. Develop frequency, duration and probability risk indices for this system.

7. Explain the transmission system reliability analysis using weather effects.

8. a) What are active and passive failures? Explain the sequences following these failures.
b) Define the following customer oriented indices:
(i) SAIFI (ii) CAIFI (iii) SAIDI (iv) CAIDI (v) ASAI (vi) ASUI.

CODE No.:10MT20705

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

STATIC AND DIGITAL PROTECTION OF POWER SYSTEM

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What are static relays? Discuss basic construction of static relay with neat diagram.

2. a) Explain opposed voltage type rectifier bridge amplitude comparator.
b) Explain techniques to measure the period of coincidence.

3. Explain how hybrid comparator can be used to obtain conic characteristics.

4. a) Explain instantaneous over current relay.
b) Obtain restraining factor for electromagnetic type static differential relay.

5. Discuss the effect of line length and source impedance on distance relays.

6. Explain the operation of microprocessor directional over current relay.

7. Derive a generalized mathematical model of distance relays for digital protection.

8. Explain the merits of digital and numerical relays.

CODE No.:10MT20706

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

ENERGY AUDIT, CONSERVATION AND MANAGEMENT

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Define energy audit. What are the objectives of energy audit? Briefly discuss various types of audits.
b) Explain the energy audit procedure for a thermal power plant.

2. Explain the following different terms in energy management program.
a) Planning b) Initiating c) Controlling d)Promoting

3. Explain the questioner and check list of top management regarding energy management.

4. a) What is energy efficient motor - explain.
b) Explain constructional aspects of an energy efficient motor and how such motors are different from a standard motor.

5. a) What are the reasons for which a system must be having high power factor?
b) What are the various methods to improve power factor? Discuss about the location of capacitors for the improvement of power factor.

6. a) Explain the effect of harmonics on power factor of a machine.
b) Explain how application of plc based metering reduces the losses during metering.

7. a) What is rate of return and how it effects the calculation of depreciation?
b) What are the factors affecting financial analysis while compensating net present value?

8. Write short notes on the following
a) life cycle costing application to lighting
b) Declining balance method.
c) Effect of voltage unbalance on induction motors

CODE No.:10MT22501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

SERVICE ORIENTED ARCHITECTURE

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain the common characteristics of contemporary SOA.

2. Write about Activity management and composition of SOA.

3. a) What is meant by end-point reference? Explain.
b) Write a note on XACML.

4. Discuss service orientation and object orientation with suitable examples.

5. a) Write about agnostic service layer.
b) Describe an agile strategy process.

6. Explain the various service modeling guidelines for service oriented analysis.

7. Describe the steps for composing a preliminary SOA with a suitable example.

8. a) Discuss various specifications needed for a WS-Policy framework.
b) Give an overview of WS-Coordination.

CODE No.:10MT22502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

SOFTWARE ARCHITECTURE AND DESIGN PATTERNS

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What is software architecture? Explain the presentation of software architecture with neat sketch.

2. Discuss about following:
a) Fault recovery.
b) Fault prevention.

3. a) Explain four phases of ATAM based evaluation.
b) Explain any three ATAM evaluation team roles.

4. a) What makes software product lines work?
b) What makes software product lines difficult?

5. a) Explain describing of design patterns.
b) What is the catalog of design pattern and explain all patterns?

6. Explain implementation of Factory pattern.

7. Explain about Interpreter.

8. Explain architectural solution to the World Wide Web.

CODE No.:10MT22503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

SOFTWARE REENGINEERING AND REUSE

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Define Business Process and explain Business Process Reengineering model with a neat diagram.

2. What is Reverse Engineering? What are the various levels of reverse engineering?

3. a) What is the main objective of software restructuring and give any three representative tools of restructuring?
b) Explain the basic characteristics of structured code.

4. Explain the five (5) types of design classes in detail.

5. What is Forward Engineering? Explain the various goals of forward engineering.

6. Explain Object-oriented software engineering.

7. Discuss about use case components and object components.

8. Explain the Application Family Engineering.

CODE No.:10MT22504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

SOFTWARE SECURITY ENGINEERING

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain with a neat diagram the benefit of Detecting Software Security Defects early.

2. a) Describe the build-up of a security assurance case.
b) Explain how to influence the security properties of software in the 'Attacker's perspective.

3. a) What is an 'Alure' case? Explain.
b) Briefly explain SQUARE process model.

4. Discuss the Issues and Challenges of Secure Software Architecture and Design.

5. Discuss the role of security testing in each of these activities.
a) Unit Testing.
b) Testing Libraries and Executable Files.
c) Integration Testing.
d) System Testing.

6. Explain briefly the Functional and Attacker Perspectives for Security Analysis.

7. Explain about the following in Security and Project Management.
a) The project's scope.
b) The project plan, including the project life cycle, which reflects software security practices.
c) Tools, knowledge, and expertise.
d) Project and product risks.

8. Discuss the following in coverage and control.
a) Antivirus and Antispyware.
b) Patch management.
c) Host configuration.
d) Vulnerability management.

CODE No.:10MT22505

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

SOFTWARE QUALITY ASSURANCE AND TESTING

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. List the constituency and their tasks to conduct software quality assurance. Also enlist the activities conducted by SQA group for attaining a high quality end product.

2. a) Explain the examples of metrics programs.
b) Explain the collecting soft ware engineering data with diagram.

3. Explain briefly about the economics of system development life cycle testing.

4. a) Discuss the testing an organizational issues and establishing a testing policy.
b) Explain the structured approach to testing and test strategy.

5. What are the eight considerations in developing testing methodologies? Explain briefly.

6. Explain
a) Random testing
b) Risk based testing
c) Regression testing.
d) White box testing.

7. Write brief notes on the following:
a) Requirement phase testing.
b) Design phase testing .
c) Physem phase testing.
d) Execution testing .

8. Explain briefly about the Eleven-step testing process with examples.

CODE No.:10MT22508

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

SOFTWARE RELIABILITY

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the need of reliable software and explain the concept of software reliability.
b) Illustrate the process of software reliability engineering.

2. a) Explain development procedure in operational profile.
b) Write about functional profile.

3. a) Discuss the failure classification.
b) How to find the common failure intensity objective? Explain.

4. a) Explain model classification scheme.
b) Write about model limitations and implementation issues.

5. a) List the differences between software complexity and software quality.
b) Explain Software reliability modeling.

6. a) Explain different types of software testing.
b) Explain the concept of operational profiles.

7. a) Explain different approaches of SRE.
b) Explain SRE during implementation phase.

8. What is neural network? Explain software reliability growth modeling in neural networks.

CODE No.:10MT23801

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

ADAPTIVE SIGNAL PROCESSING

[Digital Electronics and Communication Systems, Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Discuss about four important properties of eigen values and eigen vectors of correlation matrix $\vec{R}$ of a discrete time stochastic process in detail.

2. a) The steepest descent algorithm becomes unstable when the step size parameter μ is assigned a negative value. Justify the validity of this statement.
b) With the help of block diagram explain Adaptive Linear Combiner along with its performance.

3. a) Formulate the Winer - Hopf equations and solve them for linear transversal filters.
b) Prove that the minimum mean square error produced by transversal filters is given by $J_{min} = \sigma_d^2 - p^H R^{-1} p$

4. a) Prove that Newton's method attains optimum solution w_o from an arbitrary point w(n) on the error surface in a single iteration.
b) Evaluate with the help of equations the stability of the Steepest Descent algorithm.

5. a) Write the sequential steps followed in Least Mean Square (LMS) algorithm.
b) Consider the use of a white - noise sequence of zero mean and variance σ^2 as the input to the LMS algorithm. Evaluate the condition for the convergence of the algorithm in the mean square, and the excess mean square error.

6. a) Establish the validity of matrix inversion Lemma.
b) Prove that RLS Algorithm is convergent in mean value.

7. Write the following:
(a) Recursive mean square estimation.
(b) Kalman filtering.

8. a) Draw the block diagram of blind equalizer and develop iterative deconvolution algorithm for blind equalization of real baseband signals.
b) Explain the practical implications of blind deconvolution.

CODE No.:10MT23802

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

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) What is meant by discrete memory less source? When a discrete source is said to have memory.
b) Prove that the mutual information of a channel is symmetric, that is I{X; Y} =I{Y; X}.
c) For a binary symmetric channel probability of transmitting 1 is 'p'. What is the maximum value of 'p' ? Give suitable reasons to support the answer.

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. For a linear block code which corrects single error per code vector, show that $n \geq k = \log_2(n+1)$ and hence design a linear block code with a minimum distance of three and a message block size of eight bits.

4. a) What is Hamming distance? What are the specifications of Hamming code?
b) Let the given data bits are 00111001. Compute the Hamming code.

5. a) Consider the (15,11) Cyclic Hamming Code generated By $g(x) = 1+x+x^4$
(i) Determine the parity polynomial h(x) of this code.
(ii) Determine the generator polynomial of its dual code.
b) Design a feedback shift register for an (8, 5) Cyclic code with a generator in systematic form.

6. a) Using the generator polynomials $g_1(x) =1+x+x^2$. And $g_2(x) =1+x^2$.write the convolution code for data sequence 101011.
b) Discuss the error detecting and error correcting capabilities of convolution Codes.

7. Write Short Notes on the following
a) Viterbi Algorithm.
b) Fano Algorithm.

8. a) Determine the generator polynomial of the primitive BCH Codes of length 31. Use Galois Field (2^5) generated by $P(x)=1+x^2+x^5$.
b) Discuss the decoding procedure for BCH codes.

CODE No.:10MT23803

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

DETECTION AND ESTIMATION OF SIGNALS

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) In a binary hypothesis-testing problem, the observation z is Rayleigh distributed under both hypotheses with different parameters, that is

$$p(z|H_1) = \frac{z}{\sigma_1^2}\exp\left(-\frac{z^2}{2\sigma_1^2}\right) \qquad z \geq 0 \qquad i = 0,1$$

Obtain the likelihood ratio test for the Bayes criterion.

b) How a minimax criterion is used for detection when prior probabilities are unknown?

2. a) Find the expression for the probability of error for the problem of detection of equal energy, orthogonal signals observed in additive, white Gaussian noise?

b) Design a matched filter to detect the signal $y(t) = \begin{cases} e^{\frac{t}{2}} - e^{-t} & t \geq 0 \\ 0 & t \leq 0 \end{cases}$

The noise spectral density is $\phi_S(S) = \frac{1}{1 - s^2}$.

3. Discuss the different properties of cost functions.

4. Distinguish the terms prediction, filtering and smoothing with reference to estimator.

5. a) Discuss the properties of Power spectral density (PSD).
b) Derive an expression relating correlation and Power spectral density of a random process.

6. a) What are the conditions under which the linear mean square estimate is also the MMSE?
b) Prove that the asymptotic relative efficiency of a nonparametric test with respect to a parametric test of a specific distribution is smaller than one.

7. Consider a rectangular pulse s(t) of amplitude A and duration T, given by
s(t) = A $0 \leq t \leq T$
= 0 other wise
Assume that AT=1.
Find the spectrum of the output signal of a matched filter?

8. a) Explain how the factorization theorem is helpful in identifying a sufficient statistic.
b) Prove that Poisson and simple exponential densities belong to the exponential family.

CODE No.:10MT23804

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

HIGH PERFORMANCE NETWORKS

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the characteristics of various traffic types and distinguish between two types of information services.
b) Explain various switching mechanisms of a network.

2. a) Explain ISDN layers and protocols and frame formats.
b) What are the services of ISDN and BISDN?

3. a) Explain ATM cell header format
b) What are the functions of various layers of ATM reference model.

4. a) What are banyan networks? What are its properties?
b) Draw the structure and explain the operation of cross-bar switch .Cmpare 2* 2 switching element and cross bar switch.
c) Design a 3-stage clos network for m= 4; n1=3 ;r1=3 ;r2=2; n2=4 ; Also draw (4,4,4) symmetric three stage clos network.

5. a) Describe Folding algorithm with a suitable example.
b) Design an 8*8 benes network and find the switch settings for the following destination permutations using looping algorithm

6 5 3 0 2 1 7 4

6. a) What is a rearrangeable non blocking network? Explain.
b) Construct a 8-input benes network. Explain its operation & mention advantages.

7. a) Explain in detail about ATM addressing.
b) What is signaling in ATM? Explain about multi point UNI signaling.

8. a) Explain the components of Integrated Services Architecture (ISA).
b) What are the services of Diffserv model ? Compare Integrated and Differentiated Services.

CODE No.:10MT23805

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

WIRELESS COMMUNICATIONS

[Digital Electronics and Communication Systems, Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the concept of Cellular telephone system.
b) Compare the following technologies.
i) Wireless local loop.
ii) Personal Area Networks.

2. a) Derive the expression for the received power at a distance 'd' from the transmitter for the two-ray ground model.
b) A mobile is located 5 km away from a base station and uses a vertical quarter wave monopole antenna with a gain of 2.55 dB to receive cellular radio signals. The electric field at 1 km from the transmitter is measured to be 1 mV/meter. The carrier frequency used for this system is 900 MHz.
(i) Find the length and the effective aperture of the receiving antenna.
(ii) Find the received power at the mobile using the two-ray ground reflection model assuming the height of the transmitting antenna is 50 m and the receiving antenna is 1.5 m above the ground.

3. a) What are the various types of small scale fading? Explain.
b) What are the various factors that influence small scale fading? Explain.

4. What are the different types of diversity techniques that improve the systems performance? Explain them with suitable sketches.

5. a) Explain the time division multiple access techniques.
b) Compare the FDD& TDD duplexing techniques.

6. a) Explain in detail Rake receiver.
b) Explain Practical diversity of maximal ratio combining.

7. Write the following:
(a) Capacity of MIMO system for a flat fading channel.
(b) Narrow band antenna system modeling.

8. a) Explain the services and features of GSM Standard.
b) Explain traffic & control channels of GSM Standard.

CODE No.:10MT23807

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

IMAGE PROCESSING

[Digital Electronics and Communication Systems, Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain important properties of 2 dimensional Discrete Fourier Transform.
b) Explain sampling and quantization process during digitization of an image.

2. a) Why image filtering is done in the frequency domain?
b) What is spatial filtering? Why are smoothing spatial filterers used?

3. a) Explain smoothing frequency domain filters.
b) Explain basic relationships between pixels.

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. Define compression ratio. Discuss in detail about the compression model using block diagram.

6. Take an example (with numeriucal values) and discuss in detail Arithmetic coding.

7. a) Explain sampling of video signals.
b) Explain about two dimensional motion estimation.

8. a) Explain content dependent video coding.
b) Explain about video formation.

CODE No.:10MT23808

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

OPTICAL COMMUNICATIONS

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) With neat schematics, explain and compare the propagation characteristics of multimode fibers with graded index and step index profiles.
b) Explain the causes and effects of intramodal dispersion in optical fibers.

2. a) What are the requirements must be satisfied, while in selecting materials for optical fiber? Give some such type of materials.
b) When a perform is drawn into a fiber, the principle of conservation of mass must be satisfied under steady-state drawing conditions. Show that for a solid rod perform this is represented by the expression $s = S\left(\frac{D}{d}\right)^2$ Where D and d are the perform and fiber diameters, and S and s are the perform feed and fiber-draw speeds, respectively. A typical drawing speed is 1.2m/s for a 125 μm outer -diameter fiber. What is the perform feed rate in Cm/min for a 9mm-diameter perform?

3. a) Explain the different considerations related to optical fiber cable design and structuring.
b) Write short notes on : i) fiber splicing and splicing losses, ii) fiber connectors.

4. a) Draw the structure of a high-radiance surface-emitting LED and explain its working.
b) What the advantages and draw backs of laser diodes compared to LEDs?

5. a) What is an interferometer? Describe the features of Mach-Zehnder Interferometer and explain how it can be used as a demultiplexer.
b) Explain the significance and working principle of - i) optical switching, and ii) wavelength converters.

6. a) Distinguish between direct detection and coherent detection processes. Describe the features of a typical coherent receiver.
b) List out and differentiate between the different types of modulation schemes used for optical fiber transmission, and comment on the scrambling format.

7. a) Write short notes on : "Optical Access Network Architectures".
b) Illustrate the principle of OTDM, and discuss its merits and demerits.

8. a) Compare the unidirectional and bidirectional WDM systems.
b) What are the advantages of soliton communication systems?
c) Name some photonics simulation tools for optical communication system.

CODE No.:10MT25701

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

ALGORITHMS FOR VLSI PHYSICAL DESIGN AUTOMATION

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the top-down design methodology using Y – chart.
b) Explain graph traversal algorithms and state its time complexity.

2. a) Write the pseudo code for the Simulated Annealing algorithm.
b) What are the two methods for finding the optimal solution of a combinatorial optimization problem? Explain.

3. a) What is Compaction? Explain the Constraint graph based compaction with an example.
b) Perform the routing for the given channel shown in Figure (1) using Constrained Left Edge Algorithm.

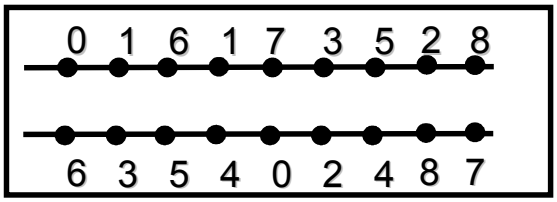


Figure (1)

4. Consider the logic network defined by the following expressions:
K= a′ ; e = k+b ; g = (b+c)′ ; f=ag ; h=ab ; i= fd+f′d′ ; j = d+s; x = ei′+e′i ; y = j+h ;

Inputs are (a, b, c, d, s) and outputs are (x, y). Draw the logic network graph. Assume that the delay of each inverter, AND and OR gates is 1 and that the delay of each NOR, EX-OR and EXNOR gate is 2. Compute the data ready and slacks for all vertices in the network. Assume that the input data-ready times are zero except for t_s=4and that the required data-ready time at the output is 7. Determine the topological critical path.

5. a) Draw a Reduced Ordered Binary Decision Diagram for the truth table given below.

X1	X2	X3	F
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	1

b) Explain about two-level logic synthesis with suitable example.

6. Explain about assignment and scheduling relevant to High-level Logic synthesis.

7. a) Discuss various FPGA technologies.
b) Explain physical design cycle for FPGA's.

8. a) Explain MCM technologies.
b) Explain partitioning problem.

CODE No.:10MT25702

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

CPLD AND FPGA ARCHITECTURES AND APPLICATIONS

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the various Programmable Logic Devices? Compare their performance features.
b) Give the step-by-step PLA implementation of the following switching functions.
$F_1 (a, b, c) = \sum m (3, 5, 6, 7)$
$F_2 (a, b, c) = \sum m (0, 2, 4)$.

2. a) Draw and explain the architecture and logic array block of Altera Max 7000 series complex programmable logic devices, in brief.
b) Draw and explain Lattice Plsi and ispLSI architecture in connection with CPLDs.

3. a) Describe in brief, ALTERA'S FLEX 8000 architecture, logic element and logic array block with neat sketches.
b) Draw and explain the basic Actel FPGA architecture. Tabulate the architectural features of Actel FPGA families.

4. a) Explain the importance of state transition table and state assignments for FPGAs. Consider a suitable example.
b) Give the significance of finite state machine. Write short notes on linked and encoded state machines.

5. a) Design and implementation of one-to-three-pulse generator using a Programmable Logic Array. Draw the relevant logic diagram.
b) Explain the basic concepts of Petri nets for state machines. Explain with suitable simple Petri net structure.

6. a) Explain the use of ASM charts in one-hot design method. Give the applications of e-hot design method.
b) What is meant by Synchronization? Explain its importance while designing complex circuits using shift registers.

7. a) Draw and explain a typical CPLD design flow. Present the Altera based Quartus II approach to CPLD design.
b) Give the specifications of system level design. Draw the flow diagrams required for data path design and controller unit design. Consider a suitable logic.

8. Perform the design, development and implementation of Decade counter using FPGA. Give the design considerations, ASM chart, state diagram and necessary source code to implement the same. Write notes on necessary EDA tool required.

CODE No.:10MT25703

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

DIGITAL SYSTEM TESTING AND TESTABILITY

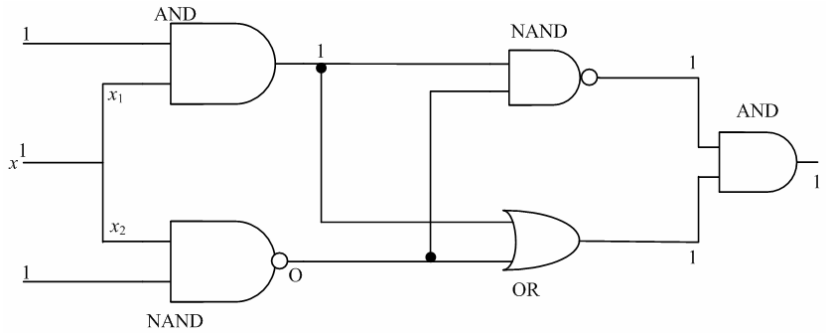
[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss in detail about complied simulation.
b) What are the three levels of modeling used to describe the digital circuits? Explain briefly about the functional modeling at logic level.

2. a) For the circuit and test in figure below, show that both x_1 S_a_0 and x_2 S_a_0 are detected , but X S_a_0 is not.



b) Explain the need for fault models.

3. What is D-algorithm? Show that how D-algorithm is used to detect the single stuct-at fault with an example.

4. a) Differentiate between isolated and integrated scan designs.
b) Explain various adhoc design techniques for testability.

5. a) Define controllability and observability.
b) Explain how DFT can be applied at board level.

6. a) Differentiate between scan based test and BIST.
b) Give a logic design for BIST hardware required to support the STUMPS methodology at the board level.

7. a) Explain various types of memories and integration.
b) Differentiate between BIST and MBIST techniques.

8. Write a brief note on
i) ICT .
ii) Delay models.

CODE No.:10MT25704

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

LOW POWER VLSI DESIGN

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following relevant to low-voltage, low-power VLSI Design limitations, in brief.
(i) Power supply voltage (ii) Interconnect wires
b) Compare CMOS, bipolar and BiCMOS technologies in terms of speed and power. Also draw the conventional BiCMOS inverter.

2. a) Explain why isolation is needed in CMOS and BiCMOS process.
b) Discuss different techniques used in bipolar transistor isolation.

3. a) Draw and explain the cross-sectional view and layout diagram of polysilicon emitter high performance BiCMOS structure.
b) Draw the cross-sectional view of a double-polysilicon self-aligned bipolar device and discuss about bipolar device structure improvements.

4. a) Draw and explain the plot for threshold voltage versus back bias voltage for two different processes related to an advanced MOSFET current model.
b) What are the different bipolar SPICE models? Explain any one of them with suitable illustration.

5. a) Explain the experimental characterization of sub-half micron MOS devices and its significance.
b) Write notes on surface p-channel for Sub-Half- Micron devices.

6. a) Draw and explain the logic diagram, truth table and standard symbol of conventional CMOS universal logic gates.
b) With the aid of schematic diagrams, compare the performance of the Merged BiCMOS logic gate with the standard BiCMOS logic gate.

7. a) What is the need for low power latches and flipflops?
b) What are quality measures for flip flops? Explain in detail.

8. Discuss different low power techniques for SRAM and DRAM memory cells.

CODE No.:10MT25705

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

SCRIPTING LANGUAGE FOR VLSI DESIGN AUTOMATION

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Why scripting languages are preferred over any other higher level languages for the design of VLSI CAD Tools?
b) What are advantages and limitations of Java scripting?

2. a) Explain the bind operators of Perl. How to parse a circuit using bind operator?
b) State the file test operators of Perl and explain.

3. a) Explain the *foreach* loop of Perl.
b) Write a Perl script to find the sum of an array of integer numbers using *foreach* loop.

4. a) Define the term 'Pipe' related to PERL language. Explain in brief, the different types of Pipes used in PERL language.
b) Write an algorithm and develop necessary source code in PERL to execute a simple arithmetic expression. Consider an example.

5. a) Explain how signals are useful for handling the Inter Process Communication between different processes.
b) Implement an algorithm and relevant PERL program to create a subroutine and to pass and return values.

6. a) How to access a particular variable from the Array of Arrays data structure of Perl?
b) Write a Perl scripting to construct an Array of Arrays using each word as an element parse from the input file consisting of line of text, where each word in a line separated with a whitespaces.

7. a) State the debugger commands in Perl.
b) Explain the details of environmental variables in Perl.

8. Explain in detail about different types of fields, buttons and lists used for Application Forms using CGI Programming.

CODE No.:10MT25708

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular Examinations December - 2013

REAL TIME OPERATING SYSTEMS

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the mount and unmount System calls in UNIX OS.
b) What is inode in UNIX OS. Explain in detail.

2. Differentiate hard and soft real time systems.

3. a) What are the various factors that are to be consider while estimating the program run time?
b) What is context switching and explain the need of context switching in embedded applications?

4. Explain the priority driven scheduling with an example.

5. a) What is kernel? Explain its structure and its functions.
b) Write short notes on commercial RTOS capabilities.

6. a) Explain Fault types in real time systems.
b) Explain redundancy in detail.

7. a) Explain context switching in Vx Works.
b) What are the different states of task in Vx Works and explain with neat state transition diagram.

8. a) Explain in detail mutex management functions in RT Linux.
b) List important features of RT Linux.

CODE No.:10MT26102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

DIGITAL SATELLITE COMMUNICATIONS

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss briefly how demand assignment may be implemented in TDMA network. What are the advantages of TDMA over FDMA in this respect?
b) A fully connected TDMA network consists of 30 earth stations. There are 400 one way links with 0.4 erlang, and the rest have 0.2 erlang. Find the number of pre-assigned channels for the network to provide 0.01 grade of service.

2. a) Write short notes on Tree Algorithm.
b) Distinguish between ALOHA and Slotted ALOHA systems. Explain their Performance Characteristics.

3. a) Explain Single-Tuned Band Pass Filter and Double-Tuned Band Pass Filter.
b) Write short notes on Cycle Splicing.

4. a) Explain the frequency HOP spread spectrum system with block diagram and derive the expression for bit-error.
b) Write a short note on satellite onboard processing.

5. a) Define VSAT and Explain VSAT Technologies.
b) Explain the Operating Environment of Mobile Satellite Networks.

6. a) Write short notes on Equatorial orbits and Inclined Orbits.
b) Explain Interim Operations.

7. a) Explain the Delay and Throughput considerations for NGSO.
b) Write short notes on Orbocomn.

8. a) Explain Master Control Station and Uplink-Installation of DBS-TV Antennas.
b) Write short notes on Error Control in Digital DBS-TV.

CODE No.:10MT26105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

RF SYSTEMS AND CIRCUITS

[Communication Systems]

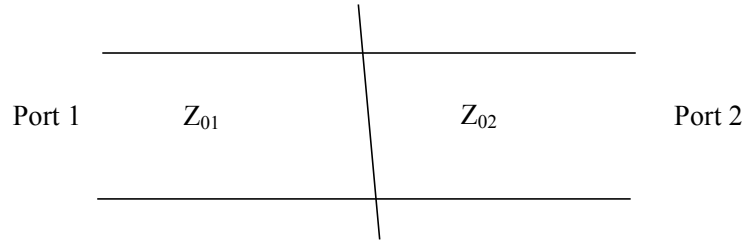
Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Draw neat sketches describing suspended strip line and coplanar strip line.
b) Describe and explain about lossy transmission line.

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) Consider a two port network consistency of a junction of two transmission lines with characteristic impedance Z_{01} and Z_{02} as shown below. Find the generalized scattering parameters of this network?



Terminated plane for both

b) Differentiate magic tee and hybrid ring.

4. a) What are cavity resonators?
b) What is hybrid ring coupler?

5. a) Draw the equivalent circuit of PIN diode and write applications of PIN diode.
b) Write various types of microwave phase shifters and explain.

6. a) What is High impedance low pass filter?
b) What are MIC filters?

7. a) Explain about MMIC fabrication techniques
i) Diffusion and implantation ii) Oxidation and film deposition
b) Describe planar transmission lines and filters in MEMS.

8. a) Explain the principle of operation of Foster-Seeley discriminator.
b) Explain the principle of synchronous detection.

CODE No.:10MT26301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

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) What are problems faced during the design of secure protocols?
b) What are the computational complexities to be considered in Modern Encryption?

2. a) Explain about the block cipher in detail.
b) What are the limitations of the key-recovery based security?

3. What is the birthday attack? How it is vulnerable to the attacks?

4. a) Write in brief about the properties of Pseudo Random Functions.
b) Give some applications of PRFs.

5. What is a Public Key Certificate? With a neat format of PKC, explain all the fields.

6. How do you implement EPE with cost equal to the cost of RSA?

7. Write about one-wayness of collision resistant hash functions.

8. a) How do you Define Security for the MACs ?
b) Discuss the construction of HMAC and Security of HMAC.

CODE No.:10MT26302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

INTRUSION DETECTION SYSTEMS

[Computer Networks and Information Security]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is intrusion detection? Describe two approaches for intrusion detection.
b) Implement public key encryption to establish confidentiality in the message from A to B for the values of m=67. KU={7,187}, KR={23,187}.

2. a) Describe in detail firewall design principles, characteristics and the various types of firewall.
b) Give the different types of viruses with examples.

3. a) Briefly write about the term rule based intrusion detection.
b) List the approach used by X.509 for user authentication.

4. Explain the basic techniques which are in use for the password selection strategies in detail.

5. a) Discuss about the evolution of attack mitigation.
b) List and explain the characteristics used to distinguish signatures.

6. What do you mean by the term steganography and illustrate the same as how it works with an example? Write the merits and applicability in the real world in brief.

7. a) List some of typical locations for deploying in-line IPS.
b) What are benefits and limitations of Network Intrusion Prevention systems?

8. a) List the capabilities provided by Cisco IDSM-2.
b) What are the different day-to-day operations of Cisco Security Agent?

CODE No.:10MT26303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

WIRELESS NETWORKS

[Computer Networks and Information Security]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain the paging function of a cellular system in detail

2. a) What is the principal application that has driven the design of circuit-switching networks?
b) Discuss in detail about wireless Topologies.

3. a) Illustrate the Transport and Tunnel mode AH on IPV4 protocol with proper examples.
b) List the services are provided by WSP.

4. Explain about ARP attacks and rate table Modification in detail with an illustration.

5. a) Discuss how a signature is signed and verified in Digital Signature Algorithm (DSA).
b) A telephony connection has a duration of 23 minutes. This is the only connection made by this caller during the course of an hour. How much is the amount of traffic, in Erlangs, of this connection?

6. a) The Internet Protocol (IP) is a network-layer protocol in the OSI model to enable packets being routed in network. What are the primary responsibilities of it? Explain the protocol structure of IP/IPv4 (Internet Protocol version)
b) Describe in detail the principal application that has driven the design of circuit-switching networks.

7. Explain the difference between hard and soft handoff.

8. Explain the following
a) Wireless Sensor Networks
b) Design issues in Sensor Networks

CODE No.:10MT26307

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations December - 2013

NETWORK PROGRAMMING

[Computer Networks and Information Security]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is a Pipe? Explain how two-way communication is performed between processes with a program.
b) Differentiate between Pipes and FIFO's.

2. a) Give the layers of Internet Protocol suite and explain in detail about the functionality of each layer.
b) Give the details of allocation of port numbers in IANA and BSD standards. Give the limitations and buffer sizes that affect the size of IP datagrams.

3. a) Give generic and IPv4 socket address structures and write example statements for initializing IPv4 structure.
b) Explain about
i) Bind and ii) Connect functions with their prototypes.

4. a) How does the Client process handle SIGPIPE signal with a program.
b) Explain wait( ) and waitpid( ) functions with examples.

5. a) Explain how Multiplexing is provided by poll( ) function.
b) Explain the following functions by giving their syntax.
i) getsockopt( ) ii) setsockopt( )

6. UDP does not have flow control. Design a method to achieve flow control at application level and write corresponding program statements.

7. a) Explain the various Resource Records in DNS.
b) Write a short notes on Resolver Option.

8. Write a brief notes on the following.
a) Pseudo Terminals b) Rlogin

CODE No.:10MT23805

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Supplementary Examinations April - 2013

WIRELESS COMMUNICATIONS

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the evolution of mobile radio communications globally.
b) List out the wireless communication systems of yester-years and explain about them briefly.

2. a) Discuss about the outdoor propagation model 'Okumura Model' in detail.
b) Find the median path loss using Okumura's model for d = 50 km, base station effective antenna height h_t = 100 m, mobile antenna height h_r = 10 m in a suburban environment. If the base station transmitter radiates and EIRP of 1 kw at a carrier frequency of 900 MHz, find the received power (assume a unity gain receiving antenna).

3. a) List out different types of small scale fading and describe the effect of each type in communication systems.
b) For each of three cases mentioned below, decide if the received signal is best described as undergoing fast fading, frequency selective fading, or flat fading.
(i) A binary modulation has a data rate of 500 kbps, f_c = 1 GHz, and a typical urban radio channel is used.
(ii) A binary modulation has a data rate of 5 kbps, f_c = 1 GHz, and a typical urban radio channel is used to provide communication to cars moving on a highway.
(iii) A binary modulation has a data rate of 10 kbps, f_c = 1 GHz, and a typical urban radio channel is used to provide communication to cars moving on a highway.

4. a) Explain the concept of frequency reuse and channel assignment strategies.
b) What do you mean by hand off and explain different handoff strategies?

5. a) Compare the methods of Multiple access techniques.
b) Explain frame slot format of TDMA system.

6. a) Explain the concept of diversity branches and signal paths.
b) Explain the space diversity of equal gain combining.

7. a) Explain the capacity of random MIMO channels.
b) Derive the mathematical model for MIMO channels.

8. Explain Forward & Reverse CDMA channels in IS-95.

CODE No.:10MT26105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Supplementary Examinations April - 2013

RF SYSTEMS AND CIRCUITS

[Communication Systems]

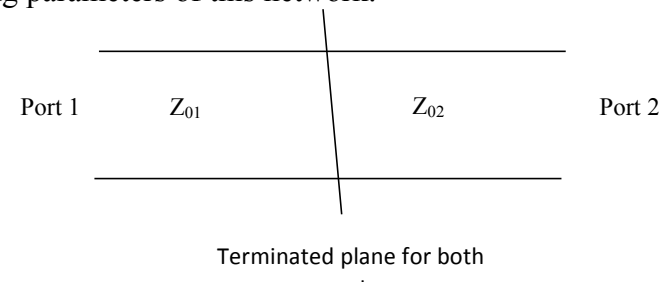
Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Write & explain wave propagation on a transmission line.
b) Derive an expression for the input impedance of a loss-less transmission line.

2. a) A ratio transmitter is connected to an antenna having an impedance 80+j40 Ω with a 50 Ω transmitter can deliver 30W when connected to a 50 Ω load, how much power is delivered to the antenna?
b) What are S- parameters? Describe the characteristics of S matrix and S parameters.

3. a) Consider a two port network consistency of a junction of two transmission lines with characteristic impedance Z_{01} and Z_{02} as shown below. Find the generalized scattering parameters of this network.



b) Differentiate magic tee and hybrid ring.

4. a) What are directional couplers?
b) What is Balun?
c) What are the applications of Balun?

5. a) What are SPST and SPDT switches?
b) What are loaded line phase shifters in microstrip?

6. a) What is High impedance low pass filter?
b) What are MIC filters?

7. a) Explain the realization of lumped elements in MMIC.
b) Describe the realization of planar transmission in MEMS.

8. a) Explain how FM detection can be achieved using a PLL.
b) Explain the principle of envelope detector.