CODE No.:10BT1BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Regular/Supplementary Examinations June - 2014

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) Describe and explain Bragg's X-ray spectrometer method of determining the wavelength of X-rays. Discuss the simple crystal structures of NaCl and KCl.
b) The spacing between principle planes of NaCl is 2.82 A^o. The first order Bragg's reflection occurs at an angle 10^o. What is the wavelength of X-rays?

2. a) Write a short essay on duality nature exhibited by light.
b) What are matter waves? Describe experiments in support of the existence of matter waves.

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

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

5. a) What are the factors affecting architectural acoustics and what are their remedies?
b) The absorption coefficient of a material is ¾. What is the ratio of maximum to minimum current during its determination by stationary wave method ?
c) What are the basic requirements for acoustically good hall?

6. a) What are Type-I and Type-II superconductors?
b) Explain the applications of superconductors.
c) Explain the working of Helium-Neon laser.

7. Describe an optical fiber and importance of optical fiber in communication systems. Give their applications.

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

CODE No.:10BT1BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Regular/Supplementary Examinations June - 2014

ENGINEERING CHEMISTRY

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is a lubricant? Explain the mechanism of lubrication.
b) What are the characteristics of insulating material? Give the engineering applications of insulators.

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

3. a) Explain the method for the determination of the EMF of a cell.
b) Distinguish between reversible and irreversible 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. a) What are colloids?
b) Write a note on the applications of colloids.

6. a) Discuss briefly the applications of infra-red spectroscopy.
b) Give a schematic block diagram of Atomic Absorption Spectrometer (AAS) and mention the function of each component present.

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

8. a) What is desalination? Give one method used for desalination of water.
b) Explain water softening by zeolite process.

CODE No.:10BT1BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Regular/Supplementary Examinations June - 2014

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 $\frac{dy}{dx} - \frac{\tan y}{1+x} = (1+x)e^x \sec y$

b) A body kept in air with temperature 25°C cools from 140°C to 80°C in 20 minutes. Find when the body cools down to 35°C?

2. a) Solve $(D^2 + 3D + 2)y = e^{e^x}$.

b) The differential equation for a circuit in which self-inductance and capacitance neutralize each other is $L\frac{d^2i}{dt^2} + \frac{i}{c} = 0$. Find the current ***i*** as a function of ***t*** given that ***i*** is the maximum current and ***i*** = 0 when ***t*** = 0.

3. a) If $u = \frac{yz}{x}$, $v = \frac{zx}{y}$, $w = \frac{xy}{z}$, show that $\frac{\partial(u,v,w)}{\partial(x,y,z)} = 4$

b) Examine for minimum and maximum values of sin ***x + sin y + sin (x + y).***

4. a) Find the centre of curvature at the point $\left(\frac{a}{4}, \frac{a}{4}\right)$ of the curve $\sqrt{\mathbf{x}} + \sqrt{\mathbf{y}} = \sqrt{\mathbf{a}}$. Find also the equation of circle of curvature at that point.

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

5. a) (i) Find the Laplace transform of $\sinh 3t \cos^2 t$.

(ii) Find the Laplace transform of the triangular wave of period ***2a*** given by

$$f(t) = \begin{cases} t, & 0 < t < a \\ 2a - t, & a < t < 2z \end{cases}.$$

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

6. a) Using Laplace transform solve $\mathbf{d^2y/dt^2 + 2\ dy/dt - 3y = \sin t}$, given that $y = \frac{dy}{dt} = 0$, when $\mathbf{t = 0}$.

b) Using Heaviside's expansion formula, find $\mathbf{L^{-1}(\ (3s + 1) / (s - 1)(s^2+1)\ )}$.

7. a) Evaluate $\iint xydxdy$ over the positive quadrant of the circle $\mathbf{x^2+y^2= a^2}$.

b) Evaluate $\int_{-1}^{1}\int_{0}^{z}\int_{x-z}^{x+z}(x+y+z)dydxdz$.

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

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

CODE No.:10BT1BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Regular/Supplementary Examinations June - 2014

MATHEMATICAL METHODS

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

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

Answer any FIVE questions
All questions carry equal marks

1.

a) By reducing the matrix $\begin{bmatrix} 1 & 2 & 3 & 4 \\ 2 & 1 & 4 & 3 \\ 3 & 0 & 5 & -10 \end{bmatrix}$ into normal form, find its rank.

b) Find the value of λ for which the system of equations $3x - y + 4z = 3$, $x + 2y - 3z = -2$, will have infinite number of solutions and solve them with that λ value.

2.

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

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

3.

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

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

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

4.

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

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

x	5	6	9	11
y	12	13	14	16

5.

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

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

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

6. Using modified Euler method find y(0.2) and y(0.4) given $y' = y + e^x$, $y(0)=0$.

7. a) If $u(z) = \dfrac{2z^2 + 3z + 12}{(z-1)^4}$ then find the values of $\mathbf{u_1}$ and $\mathbf{u_2}$.

b) Using Z-transforms, solve $\mathbf{u_{n+2} + 4.u_{n+1} + 3.u_n = 3^n}$ and $\mathbf{u_0 = 0, u_1 = 1}$.

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

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

CODE No.:10BT1EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Regular/Supplementary Examinations June - 2014

PROBLEM SOLVING AND COMPUTER PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write the difference between hardware and software? Mention any two hardware devices necessary in any computer system and also mention any two software used in a computer.
b) Draw a flow chart for exchanging values of two different variables.

2. a) What is associativity? What are the different types of associativities available and give two examples for each type of associativity.
b) Explain in detail about any three un-formatted input or output functions used in C language.

3. a) Distinguish between While and Do-while control loops with examples.
b) Write a C program to demonstrate Switch statement.

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

5. a) What is an array? What are the different ways of storing arrays in memory?
b) Write a C program that reads a string as input and convert into its equivalent *double* number.

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

7. a) Explain indirect selection operator with an example.
b) Explain in detail about the concept of Dynamic memory allocation.

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

CODE No.:10BT1HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Regular/Supplementary Examinations June - 2014

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. Discuss the role played by Mokshagundam Visvesvarayya in building a technologically independent India.

2. Sketch the character of Krishna in the story "The Connoiseur".

3. Trace Sir C.V.Raman's growing interest in science and how he came to receive the Nobel Prize in Physics.

4. Bring out Kalpana Chawla's fiery spirit by narrating the main events in her life.

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

6. Give an account of the entry of Charles Chaplin into films.

7. a) Write an essay on the challenges now being faced by India in the fields of science and technology.
b) Write a letter to your friend encouraging him to prepare for the IAS cadre.

8. **a. Fill in the blanks with suitable prepositions:**
i. There is a tea shop _____ the corner.
ii. They sat _____a table near the window.

b. Correct the errors in the following sentences:
i. Each guest was laughing at the top of his voice.
ii. I was willing to go to the market.

c. Choose the correct verb out of the two given in brackets.
i. He was _____a novel (read, reading).
ii. Even the best of the batsmen _____sentiments (fail, fails)

d. Fill in the blanks with an appropriate article.
i. This is _____ nice coffee.
ii. The Chinese are known _____ their industry.

e. Change the voice of the verbs in the following sentences.
i. Raju has painted these pictures
ii. Komali had finished the work.

f. Put the verbs in brackets into the future perfect tense.
i. He song romantic songs (sing).
ii. She wrote the novel (write).

g. Rewrite the following sentences in indirect speech.
i. The boy said I can do it.
ii. Sam said shall I switch on the fan.

CODE No.:10BT10101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Regular/Supplementary Examinations June - 2014

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A roller of weight W = 1,000 N rests on a smooth inclined plane and is kept from rolling down by a string AC as shown in Fig.1. Using the method of projections, find the tension S in the string and the reaction R_B at the point of contact B.

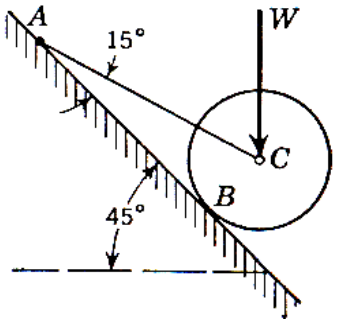

Fig.1

2. a) State the equations of static equilibrium and explain free body diagram.
b) Two smooth pipes, each having a mass of 3kN are supported by the forks as shown in Fig.2. Draw the free-body diagrams for each pipe and both pipes together. Also calculate the forces exerted by the pipes on the forks.

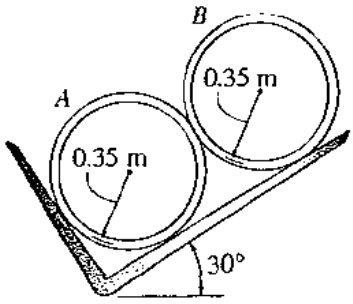

Fig. 2

3. a) What do you understand by a 'Deficient Frame'?
b) The truss ABC shown in Fig.3 has a span of 5m. It is carrying a load of 20kN at its apex. Find the forces in the members AB, BC and AC, using method of joints. End A is hinged and B is supported on rollers.

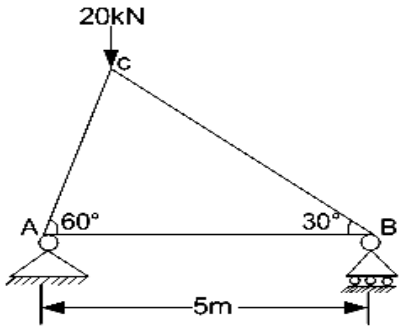

Fig.3

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

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

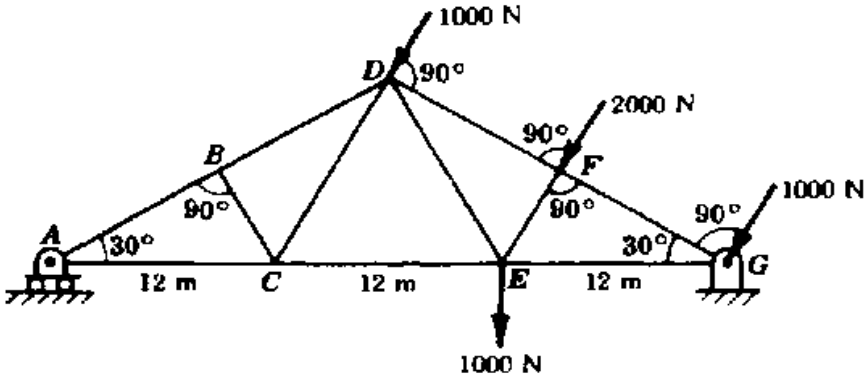

Fig.4

5. a) What is centroid? Discuss its engineering applications.

b) Locate the centroid of the area shown in Fig.5.

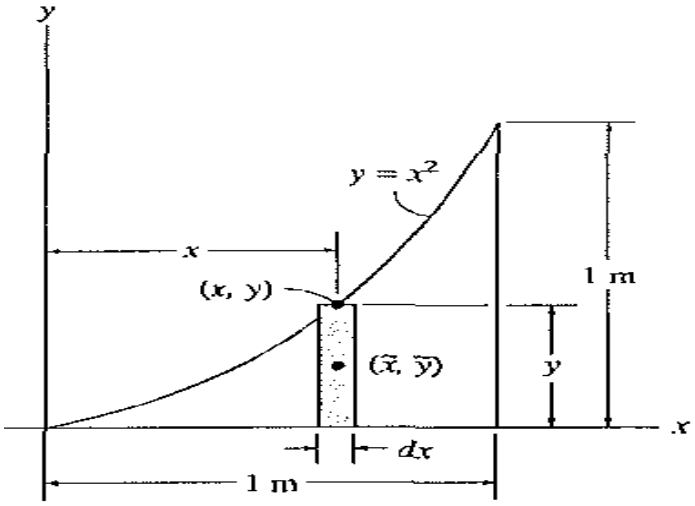

Fig.5

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

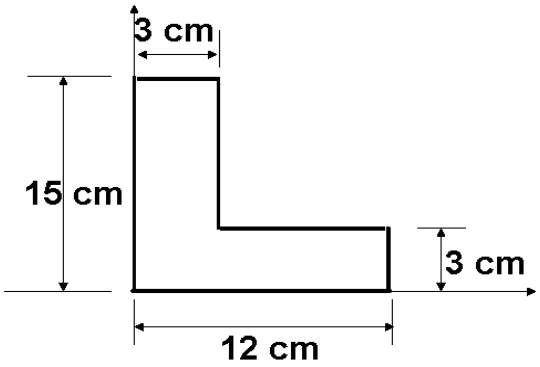

Fig.6

7. A small block starts from rest at point A and slides down the inclined plane as shown in Fig.7. What distance along horizontal plane will it travel before coming to rest? The coefficient of kinetic friction between the block and either plane is 0.3. Assume that the initial velocity with which it starts to move along BC is of the same magnitude as that gained in sliding from A to B.

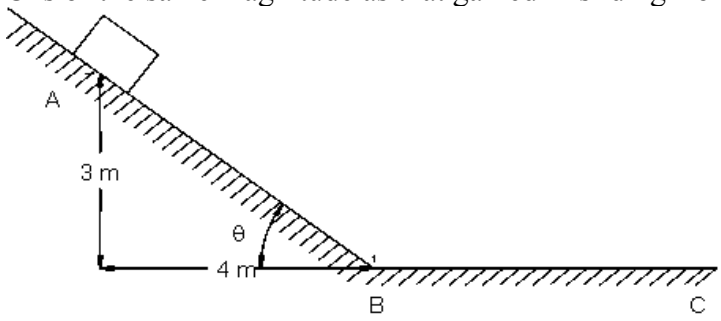

Fig.7

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

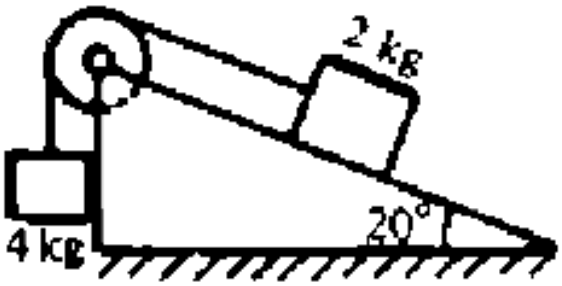

Fig.8

CODE No.:10BT1BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations January - 2014

ENGINEERING PHYSICS

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

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

Answer any FIVE questions
All questions carry equal marks

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

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

3. a) Write short notes on semiconductors.
b) Distinguish between the intrinsic and extrinsic semiconductors.
c) What do you mean by conductivity of semiconductor materials? Obtain expression for the conductivity of N and P type semiconductors.

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

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

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

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

8. a) What are the methods of preparation of nano materials? Explain. What is ball milling?
b) What are the properties and applications of nano materials? What is plasma arching?

CODE No.:10BT1BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations January - 2014

ENGINEERING CHEMISTRY

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are insulators? Write the important characteristics of insulating materials.
b) Explain the following with reference to lubricants:
(i) flash and fire points (ii) cloud and pour points

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

3. a) Derive Nernst equation for the calculation of EMF of an electrochemical cell.
b) Explain the working of hydrogen-oxygen fuel cell. Write the cell reactions.

4. Discuss different factors that influence corrosion.

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

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

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

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

CODE No.:10BT1BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations January - 2014

ENGINEERING MATHEMATICS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Solve the differential equation $(e^y + 1)\cos x\,dx + e^y \sin x\,dy = 0$.

b) The number N of bacteria in a culture grew at a rate proportional to N. The value of N was initially 100 and increased to 332 in one hour. What was the value of N after 1 ½ hours.

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

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

3. a) Determine whether the following functions are functionally dependent or not. If they are functionally dependent, find the relation between them.

$$u = \frac{x}{y} \qquad v = \frac{x+y}{x-y}$$

b) Examine for extreme values of $f(x,y) = \mathbf{x^4 + y^4 - 2x^2 + 4xy - 2y^2}$

4. a) Find the centre of curvature at the point $\left(\frac{a}{4}, \frac{a}{4}\right)$ of the curve $\sqrt{x} + \sqrt{y} = \sqrt{a}$. Find also the equation of circle of curvature at that point.

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

5. a) Find (i) $L\{e^t(\cos 2t + \frac{1}{2}\sinh 2t)\}$ (ii) Find $L^{-1}\{\tan^{-1}(s+1)\}$

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

6. a) Solve by using Laplace Transforms: $\frac{d^2x}{dt^2} + 9x = \cos 2t$, if $x(0) = 1, x\left(\frac{\pi}{2}\right) = -1$ when $y(0) = 1, y^1(0) = -1$.

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

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

b) Evaluate $\int_0^3 \int_1^{\sqrt{4-y}} (x+y)\,dx\,dy$ by changing the order of integration.

8. a) Find a Unit vector normal to the surface $\mathbf{x^3 + y^3 + 3xyz = 3}$ at the point (1, 2, -1).

b) Apply Green's theorem to prove that the area enclosed by a plane curve is $\frac{1}{2}\int_C xdy - ydx$. Hence find the area of an ellipse whose semi-major and semi-minor axes are of lengths a and b.

CODE No.:10BT1BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations January - 2014

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) Find two non-singular matrices P and Q such that PAQ = I, where I is unit matrix and $A = \begin{bmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$

b) For which values of 'a' the following linear system has
(i) No solution (ii) Unique solution (iii) Infinitely many solutions
$x - y + z = 4$, $x + 3y + az = 2$, $2x + ay + 3z = 3$.

2. a) Verify that the sum of eigen values is equal to the trace of 'A' for the matrix $A = \begin{bmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{bmatrix}$ and find the corresponding eigen vectors.

b) Reduce the quadratic form to the normal form by an orthogonal reduction $3x^2 + 2y^2 + 3z^2 - 2xy - 2yz$.

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

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

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

4. a) Define Interpolation. Find the number of men getting wages below Rs.15 from the following by Newton forward interpolation

Wages in Rs :	0 - 10	10 - 20	20 - 30	30 - 40
Frequency :	9	30	35	42

b) The following table gives the viscosity of an oil as a function of temperature, using Lagrange's interpolation find the viscosity of oil at a temperature of 140^0C.

Temperature:	110	130	160	190
Viscosity :	10.8	8.1	5.5	4.8.

5. a) A cubic function y = f(x) satisfies the following data.

x	0	1	3	4
y	1	4	40	85

Determine the function f(x) and hence fine $f^1(2)$.

b) Evaluate $\int_0^{\frac{\pi}{2}} \sqrt{\sin\theta}\ d\theta$ using Simpsons $1/3^{rd}$ rule with $h = \pi/12$.

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

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

7. a) Represent f(x) $= \sin \frac{\pi x}{l} in\ o < x < l$ by a Fourier cosine series

b) Find the Fourier cosine transform of f(x) = $\begin{cases} x & , 0 < x < 1 \\ 2 - x & , 1 < x < 2 \\ 0 & , x > 2 \end{cases}$

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

b) using the Z-transform , solve $\mathbf{u_{n+2} + 2u_{n+1} + u_n = 0}$ given that $\mathbf{u_0 = 0 = u_1}$.

CODE No.:10BT1BS05

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations January - 2014

MATHEMATICS FOR BIOTECHNOLOGISTS

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1.

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

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

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

2.

a) Show that $f : \Re - \{0\} \to \Re$ defined by $f(x) = \frac{x - |x|}{x}$ is continuous.

b) Find the derivative of $x^2 2^x \log x$.

3.

a) Evaluate $\int \frac{2x + 3}{3x^2 + 14x - 5}\, dx$.

b) Find the area of the region bounded by the curve $y = \sin x$ and the x-axis between $-\pi$ *and* π.

4.

a) Solve $\left(1 + e^{x/y}\right)dx + e^{x/y}\left(1 - \frac{x}{y}\right)dy = 0$.

b) Solve $(x^2 + y^2 - a^2)x\,dx + (x^2 - y^2 - b^2)y\,dy = 0$.

5.

a) Solve $\frac{d^2y}{dx^2} + 4y = x^2 + \cos 2x$.

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

6.

a) Find i) $L[f(t)]$ where $f(t) = \begin{cases} \sin t, & 0 < t < \pi \\ 0, & t > \pi \end{cases}$ ii) $L^{-1}\left[\frac{e^{-\pi s}}{s^2 + 1}\right]$.

b) Calculate the inverse Laplace transform of $\frac{1}{s^3(s^2 + 1)}$, by Convolution theorem.

7. (a) Using Laplace Transform solve $y'' - 3y' + 2y = 4x + e^{2x}$ where $y = 1, y' = -1$ *at* $x = 0$.

(b) Find the Laplace transform of $\left[e^{-t}\int_0^t t\cos t\, dt\right]$.

8. a) If $f = (x + y + 1)i + j - (x + y)k$, show that $f.curl\, f = 0$.

b) Using divergence theorem for the function $f = yi + xj + z^2 k$ over the cylindrical region bounded by $x^2 + y^2 = 9$, $z = 0$ *and* $z = 2$.

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CODE No.:10BT1EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations January - 2014

PROBLEM SOLVING AND COMPUTER PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

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

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

3. a) Write the purpose of ***continue***, ***goto*** and ***break*** statements.
b) Any number ***x*** is called *coloured number* if it does not contain any substring ***y*** with the property that the product z of all the digits of y is not equal to any of the substrings of ***x***. (For example, take ***x*** = 263, then its substrings are 2, 6, 3, 26, 63, 263 only. Now, take any substring y= 26 then z= 2*6=12 or y=63 then z =6*3=18. Neither z is a substring of 263), Write a C program to check whether the given any three digit number is coloured number or not.

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

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

6. a) What are the different types of storage classes available in C language and explain in detail about them?
b) What is the difference between a union and a structure in C? What are the different ways of passing a structure as an argument to a function?

7. a) What is the difference between array of pointers and pointer to an array? What are the different ways for allocating memory for variables dynamically and write the syntax of each of them.
b) Write a C program for demonstrating how an array of elements can be passed using pointers.

8. a) Using command line arguments, write a program to copy a file contents.
b) Define data structure. Write about the implementation of stack operations.

CODE No.:10BT1HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations January - 2014

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. Describe in detail the charming scenery, festivals and customs of Ladakh.

2. According to Nandan Nilekani, what are the leadership qualities that a person should possess? Elaborate.

3. C.V. Raman's determination, "spirit and contributions will indeed remain special within the context of the practice of science in India". Illustrate.

4. Amartya Sen used analysis of economics and the principles of philosophy for the benefit of the poor. Substantiate.

5. How normalcy returned after the devastation of Tsunami in Cuddalore?

6. Charlie Chaplin was a master entertainer. Explain with reference to his life and films.

7. a) Write an essay on the present state of technical education in India and suggest ways to improve it.
b) Write a letter to your father describing your future career plans.

8. **a. Fill in the blanks with suitable propositions.**
i. Priya has known _____ along time.
ii. Himesh moved _____ a new house.

b. Correct the errors in the following sentences.
i. Each of the boys have won a prize.
ii. The society consists of you and me.

c. Choose the correct verb out of the two given in brackets.
i. Plenty of liquids _____ required in summer (is, are)
ii. Every one of the house _____ driving (know, knows).

d. Fill in the blanks with appropriate article.
i. He picked _____ his food.
ii. She is _____ my job.

e. Change the voice of the verbs in the following sentences.
i. The girls are preparing bouqets.
ii. They are flying kites.

f. Put the verbs in brackets into the past perfect tense.
i. I shall help you (help).
ii. She is writing a story (write).

g. Rewrite the following sentences in the indirect speech.
i. Sandhya said please wait here till I return.
ii. The officer said to his subordinate Don't come late.

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CODE No.:10BT10101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations January - 2014

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

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

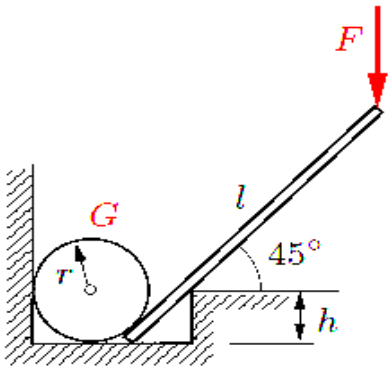

Fig.1

2. Calculate support reactions at A and B from the following Fig. 2

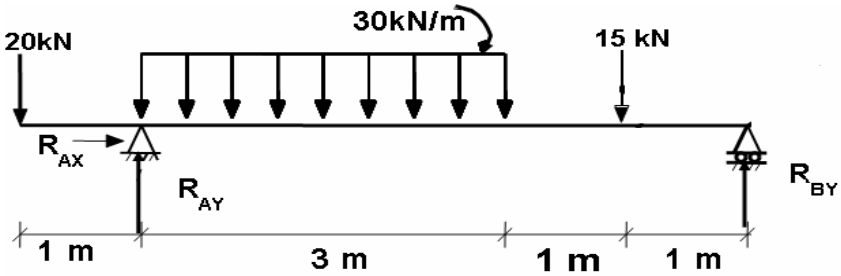

Fig. 2

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

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

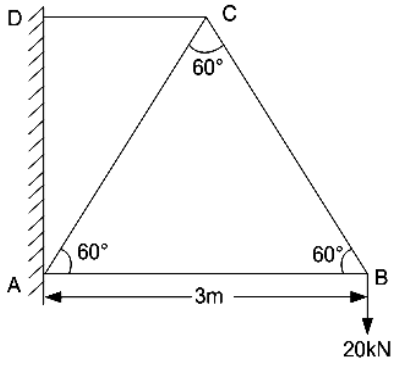

Fig.3

4. a) Explain:

(i) Angle of friction
(ii) Angle of repose
(iii) Cone of friction

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

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

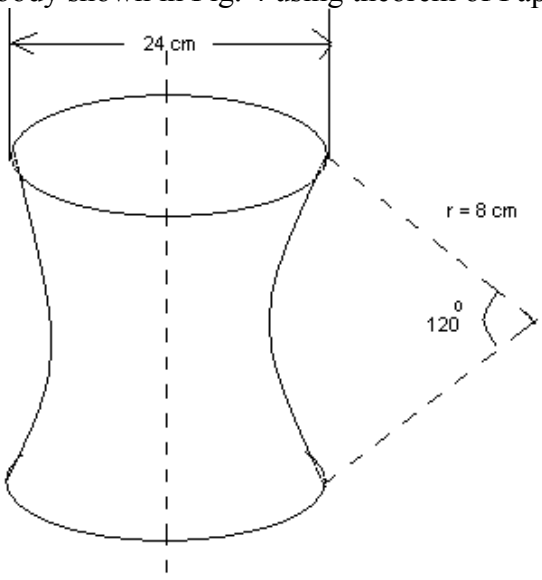

Fig. 4

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

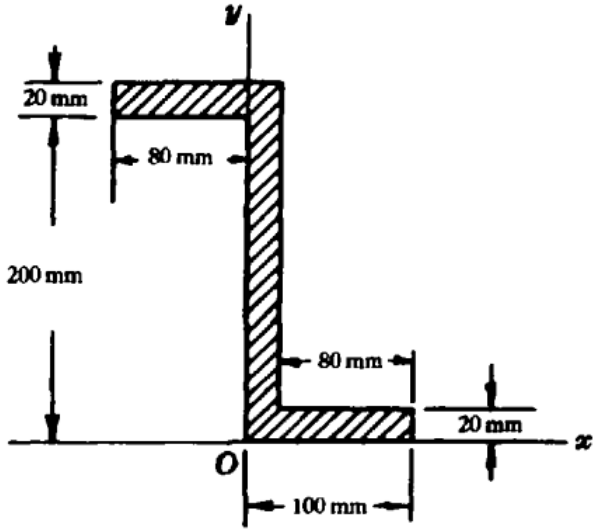

Fig. 5

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

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

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

PROBABILITY AND STATISTICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) If A and B are two events such that B $\subset$ A, show that P(A) $\geq$ P(B).
b) If A and B are independent events, show that $\bar{A}$ and $\bar{B}$ are also independent.

2. a) Determine the Binomial distribution for which the mean is 4 and variance is 3 and find its mode.
b) If X is a Poisson variate such that P(X=2)=9(X=4)+90P(X=6) find the mean of X.

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

b) 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 population consists of six numbers 5, 10, 14, 18, 13, 24. Consider all possible samples of size two which can be drawn without replacement from the population.
Find (i) the mean of the population (ii) the standard deviation of the population
(iii) the mean of the sampling distribution of means
(iv) the standard deviation of the sampling distribution of means.
b) Explain the following with examples.
1) Null hypothesis 2) Type - I error 3) Type - II error

5. a) A manufacturing company has submitted a claim that 90% of items produced by a certain process are non defective. An improvement in the process is being considered that the feel will lower the proportion of defectives below the current 10%. In an experiment 100 items are produced with the new process and 5 are defective. Is this evidence sufficient to conclude that the method has been improved (P>0.90)? Use 0.05 level of significance.
b) An electrical firm manufactures light bulbs that have a length of life that is approximately normally distributed with a standard deviation of 40 hours. If a random sample of 100 bulbs has an average life of 780 hours, can we conclude that the life time of light bulbs is less than785 hours? Use 0.05 level of significance.

6. Two sample polls of votes for two candidates A and B for a public office are taken, one from residents of rural area and other from residents of urban area. Examine whether the nature of the area is related to voting preference in the election

	Vote for		
Area	**A**	**B**	**Total**
Rural	620	380	1000
Urban	550	450	1000
Total	1170	830	2000

7. a) What do you understand by Statistical Quality Control? Discuss briefly its need and

utility in industry? What are the causes of variation in quality?

b) What is Control chart? Explain the basic principles underlying the Control Charts.

8. 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 repair men is low and cheap, other fast but expensive. The slow-cheap repair man demands Rs 20 per hour and will repair the break down machines exponentially at the rate of Rs 4 per hour. The fast-expensive repair men demands Rs 30 per hour and repair machines exponentially at an average rate of Rs 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) Regular/Supplementary Examinations June - 2014

ENVIRONMENTAL SCIENCES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write a note on atmospheric segments.
b) Explain the biotic and abiotic factors of an ecosystem.

2. a) What are the major mineral resources in India? Give its types. How mining affects the environment?
b) How the modern agricultural practice affect our environment? Explain.

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

4. a) Discuss in detail the bio-geographical classification in India.
b) Explain biosphere reserves. Write about the wild life sanctuaries.

5. a) Write the different sources of soil pollution and how it can be controlled.
b) Work out a Disaster Management Plan for Earthquake.

6. a) Write the various sources of radioactive pollution and its adverse effects.
b) Write the sources of Marine Pollution and control measures.

7. a) What is meant by population stabilization? Discuss family welfare and family planning program in an Indian context.
b) Discuss objectives and elements of value education. How can the same be achieved?

8. a) Write the role of information technology in environment and human health.
b) What is population explosion? What steps are taken to check the population growth?

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

OPTIMIZATION TECHNIQUES

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the term constraint surface.
b) What is the difference between a bound point and a free point in design space?

2. a) Find the output Q which maximizes profit Z given by the relationship: $Z = 5000 + 1200Q - Q^2$
b) Using the Lagrangian multiplier method,
Minimize $\mathbf{f=k\,x^{-1}y^{-2}}$; subject to $\mathbf{g = x^2 + y^2 - a^2}$.

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

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. a) Find the minimum of the function $\mathbf{f=}\lambda^5 - 5\lambda^3 - 20\lambda + 5$ by Fibonacci search in the internal **(0, 5)**. Take total number of experiments as **8**.
b) Solve the following by using quadratic interpolation method.
Minimize $\mathbf{f(x) = (1-2x)^4-3(1-2x)\,(2-11x)-2(2-11x)^2}$.

6. Minimize $\mathbf{f(x_1\,x_2)} = x_1 - x_2 + 2x_1^2 + 2x_1x_2 + x_2^2$ from the starting point $X_1 = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$ using Powell's method.

7. Construct the ϕ_k function according to the exterior penalty function approach and complete the minimization of ϕ_k for the following problem.
Minimize $f(x) = (x-1)^2$
Subject to $g_1(x) = 2 - x \le 0$, $g_2(x) = x - 4 \le 0$.

8. a) What is dynamic programming? Explain its optimality criterion.
b) Solve the following linear programming problem by dynamic programming:
Max. $\mathbf{Z=2X_1+3X_2}$ Subject to $\mathbf{X_1-X_2\le1;}$ $\mathbf{X_1+X_2\le3}$ and $\mathbf{X_1\ge0;\ X_2\ge0.}$

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Mechanical Engineering, Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Define Elasticity of demand. Explain the various types of elasticity of demand with suitable examples.

2. Discuss briefly different cost concepts relevant to managerial decisions of planning and control.

3. What is monopoly? How can you determine the price under monopoly?

4. Differentiate between sole proprietorship, Partnership and joint stock company.

5. From the following balances draw up a Trial Balance:

Name of Account	Amount (Rs.)
Pradeep's capital	40,000
Bank OD	10,000
Machinery	26,800
Cash in hand	2,000
Fixtures and fittings	11,000
Opening stock	90,000
Bills payable	14,000
Creditors	80,000
Debtors	1,26,000
Bills receivables	10,000
Purchases	1,00,000
Sales	2,58,000
Returns from customers	2,000
Returns to creditors	2,200
Salaries	18,000
Manufacturing wages	8,000
Commission	11,000
Trade expenses	3,000
Discount (Cr.)	8,000
Rent	4,400

6. Prepare Profit and Loss Account from the following particulars

Name of Account	Amount (Rs.)	Name of Account	Amount (Rs.)
Gross Profit	5,00,000	Office Maintenance	25,000
Rent Received	50,000	Office Lighting	10,000
Interest Received	75,000	Office Rent	25,000
Discount Received	50,000	Stationery Expenses	39,000
Legal Expenses	10,000	Telephone bill	2,500
Auditor Fee	15,000	Internet Services Monthly Rent	3,000
Municipal Taxes	10,000	Fuel Expenses	5,000

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

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

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

8. Explain the feature of Tally and group creation in Tally.

CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is a fluid? How are fluids classified?
b) Explain 'surface tension' and capillarity.
c) The right limb of a U-tube manometer is opened to the atmosphere. The left limb contains water and is connected to a pipe full of water at a pressure. The free surface of the mercury and the centre of the pipe are at the same level. If the difference of level between the two mercury surfaces is 80 mm, find the pressure intensity of water in the pipe.

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) Explain the terms Hydraulic Gradient Line and Total Energy Line.
b) Two pipes each 250 m long are available for connecting to a reservoir from which a flow of 0.08 m^3/s is required. The pipe diameters are 10 cm and 20 cm respectively. Compare the head loss through the system if the pipes constitute a series and parallel arrangement. Neglect minor losses due to pipe transitions and fittings. Assume f= 0.01 in the Darcy relation $h_f = 4flv^2/2gd$.

4. a) Derive an expression for the hydraulic efficiency when a liquid jet strikes a single moving curved vane.
b) A jet of water of diameter 100 mm strikes a curved plate at its centre with a velocity of 15 m/s. The curved plate is moving with a velocity of 7 m/s in the direction of the jet. The jet is deflected through an angle of 150^0. Assuming the plate smooth find:
i) Force exerted on the plate in the direction of the jet.
ii) Power of the jet and
iii) Efficiency.

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

6. a) How are the turbines are classified and distinguish between impulse turbines and reaction turbines.
b) A Pelton wheel is having a mean diameter of 0.8 m and is running at 1000 r.p.m. The net head on the turbine is 400m. If the side clearance angle is 15^0 and discharge through nozzle is 150 litres/sec, determine
i) power available at nozzle ii) hydraulic efficiency.

7. a) What are unit quantities? Define the unit quantities for a turbine. Why are they important?

b) A turbine is to operate under a head of 30 m at 300 r.p.m. The discharge is 10m³/s. If the efficiency is 90%,
Determine:

i) specific speed of the machine,
ii) power generated and
iii) type of the turbine.

8. a) How do you classify Centrifugal Pumps?

b) A single acting reciprocating pump has the plunger diameter of 20 cm and stroke of 30 cm. The pump discharges 0.53 m³ of water per minute at 60 r.p.m. Find the theoretical discharge, co-efficient of discharge and percentage slip of the pump. Further, if suction and delivery heads are 4m and 12m respectively, work out for the power required to run the pump.

CODE No.:10BT40101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

STRUCTURAL ANALYSIS - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive expression for the principal planes in strained body in terms of σ_x, σ_y and τ_{xy}.
b) Determine the principal stresses and maximum shear stress, inclination of corresponding planes of a strained body shown in Fig.1.

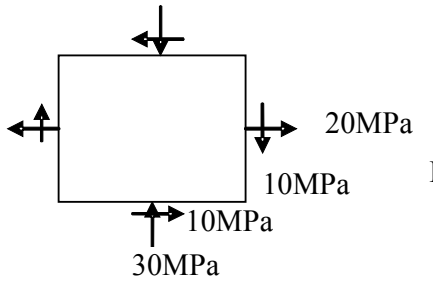

Fig.1

2. a) Derive the deflection equation $El\frac{d^2y}{dx^2} = -M$.
b) Determine the deflection and slope at the free end of a cantilever of span 4m, subjected to UDL of 2kN/m acting between the mid span and fixed end. Take **$EI=10^4 kN.m^2$**.

3. a) State and prove Moment area theorem II
b) Obtain expression for the deflection at the mid span of a simply supported beam subjected UDL over the entire span. Use moment area theorems.

4. A hollow cast-iron column whose outside diameter is 220 mm and has a thickness of 20 mm is 5.4 m long and is fixed at both ends. Calculate the safe load by Rankine's formula using a factor of safety of 2.7. Find the ratio of Euler's to Rankine's loads. Take **$E_{cast\ iron}$ = 107 GPa** and Rankine's constant = 1/1650 for both ends pinned case and the crushing strength of the material as 565 MPa.

5. A solid circular shaft is subjected to a bending moment of 67 kNm and a torque of 32 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 = 0.29, the stress at elastic limit of the material is 285 MPa and the factor of safety=3.0.

6. Determine the principal moments of inertia for an unequal 'L' angle section of size 60 X 40 X 6 mm.

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

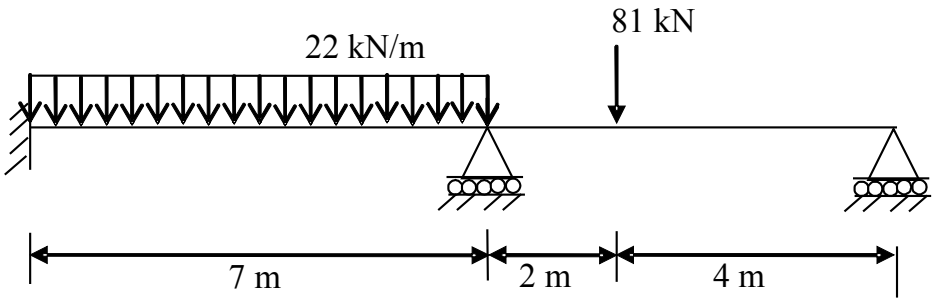

Fig.2

CODE No.:10BT40102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

FLUID MECHANICS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) A kite 0.8 m**x**0.8m weighing 3.924 N assumes on angle of 12° to the horizontal. The string attached to the kite makes an angle of 45° to the horizontal. The pull on the string is 24.525N when the wind is flowing at a speed of 30 km/hour. Find the corresponding coefficients of drag and lift. Density of air is given as 1.25 kg / m^3.

b) Explain the terms:
Laminar boundary layer, turbulent boundary layer and laminar sub layer.

2. a) Explain the various types of flows in open channels.

b) A trapezoidal channel has side slopes of 1 horizontal to 2 vertical and the slope of the bed is 1 in 1500. The area of the section is 40 m^2. Find the dimensions of the section if it is most economical. Determine the discharge of the most economical section, if Chezy's constant C = 50.

3. a) Explain the term hydraulic jump. Derive an expression for the depth of hydraulic jump in terms of the upstream froude number.

b) Briefly explain the classification of surface profiles.

4. a) Show that the efficiency of a free jet striking normally as series of flat plated mounted on the periphery of a wheel never exceeds 50%.

b) A jet of water having a velocity of 55m/sec is deflected by a vane moving at 5m/sec in a direction at 35^0 to the direction of jet. The water leaves the vane normally to the motion of the vane. Draw the inlet and outlet velocity triangles and find out the vane angles for no shock at entry and exit. Take the relative velocity at the exit as 0.85 times the relative velocity at the entrance.

5. Differentiate between:

a) The impulse and reaction turbines.
b) The radial and axial slow turbines.
c) The inward and outward radial flow turbines.
d) Kaplan and propeller turbines.

6. a) Define the terms 'unit power', 'unit speed' and 'unit discharge' with reference to a hydraulic turbine. Derive the equation for the unit discharge.

b) What is a surge tank? What are the different types of surge tanks? Explain briefly.

7. a) 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 36m 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 7m. The impeller is 38 cm in diameter and 2.5 cm wide at mouth and revolves at 1200 rpm. Its exit blade angle is 35^0. If the manometric efficiency of the pump is 82% determine the discharge and pressure at the suction and delivery branches of the pump.

8. Explain the following

a) Load factor.
b) Utilization factor.
c) Capacity factor.
d) Hydroelectric power plants.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

REINFORCED CEMENT CONCRETE STRUCTURES - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the balanced, under-reinforced and over-reinforced sections as per Working Stress and Limit State Methods.
b) Design a singly reinforced section for a simply supported beam of effective span 5 m carrying an imposed load of 10 kN/m. Use M20 concrete and Fe 415 grade steel. Assume moderate exposure condition. Adopt working stress method. Design reinforcement only for flexure.

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

3. a) Find the design constants in Limit state method for M20 grade concrete and Fe 415 grade Steel.
b) Determine the ultimate moment of resistance of the T- beam section with effective width of flange 1050mm,width of rib 250mm,effective depth of the beam 540mm, thickness of flange 120mm and area of steel of 2250mm^2. Use M20 grade concrete and Fe 415 grade steel.

4. a) With a neat sketch, explain the force components that participate in the shear transfer mechanism at a flexural-shear crack location in a reinforced concrete beam.
b) A simply supported beam of 6.3 m effective span, is to carry a uniformly distributed load (dead load) of 25 kN/m including its self weight, and a live load of 35 kN/m. Design the beam for shear using Limit state method. Use M25 concrete and Fe 500 grade steel. Sketch the reinforcement details.

5. a) Explain the behavior of short and long columns.
b) Design a RC column of unsupported length 3.6 m subjected to an axial load of 2500 kN. Use M 20 concrete and Fe 415 steel.

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. a) Briefly explain the design of two way slab as per IS code provisions.
b) Design a two way slab 4m **x** 6m continuous on all the edges and supported on 300 mm wide beams to serve as an office floor. Adopt M 20 grade concrete and Fe 415 grade steel.

8. a) Distinguish between short-term deflection and long-term deflection in RC members.
b) A one-way slab has been designed for a simply supported effective span of 4.5 m with an overall depth of 180 mm and a clear cover of 20 mm, M25 concrete and Fe 415 steel. The dead loads are taken as 4.0 kN/m^2 and the live loads as 2.0 kN/m^2. The longitudinal bars are designed as 10 mm dia @ 150 mm c/c. Verify the adequacy of the thickness provided:
i) applying the limiting span/effective depth ratio;
ii) actual calculation of total deflections.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

CONSTRUCTION, PLANNING AND PROJECT MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain briefly about various types of Rubble Masonry with neat diagrams.
b) Describe the Combined footings.

2. a) Explain the construction of concrete and mosaic floors.
b) Describe the King-Post truss and Queen-post truss.

3. a) State the types of termites. Explain the anti termite treatment.
b) Explain the important types of paints.

4. a) Explain the types of organization.
b) Explain the Labour problems and Labour Legislation in India.

5. a) Explain about resource smoothing and resource leveling. Discuss the functions of material management departments.
b) Give the importance of construction equipment and in detail give the classification of construction equipment.

6. a) Explain, what do you mean by project planning, scheduling and controlling.
b) A project consists of 8 activities of P,Q,R,S,T,U,V,W with completion times as given below.

Activity	P	Q	R	S	T	U	V	W
Duration (weeks)	2	4	2	4	6	4	5	4

The precedence relationships are as follows
P and Q can be performed in parallel; R and S cannot start until P is complete;
T can not start until half the work of activity R is complete;
U can start only after activity S is complete; V succeeds R;
W is the last activity, which should succeed T.

i) Draw the bar chart
ii) What is the total time of completion of the project?

7. a) Explain the steps in Network development.
b) A project consists of 10 activities as detailed below.

Activity	P	Q	R	S	T	U	V	W	X	Y
Identification	(1,2)	(2,3)	(2,4)	(3,6)	(3,5)	(4,5)	(4,7)	(5,8)	(6,8)	(7,8)

Draw the Step by Step development of the Network diagram and give numbers to the events.

8. Figure.1 shows the network for a construction project, with the three time estimates of each activity marked.

Determine

i) Critical path and its standard deviation
ii) Probability of completion of project in 40 days
iii) Time duration that will provide 95% probability of its completion in time

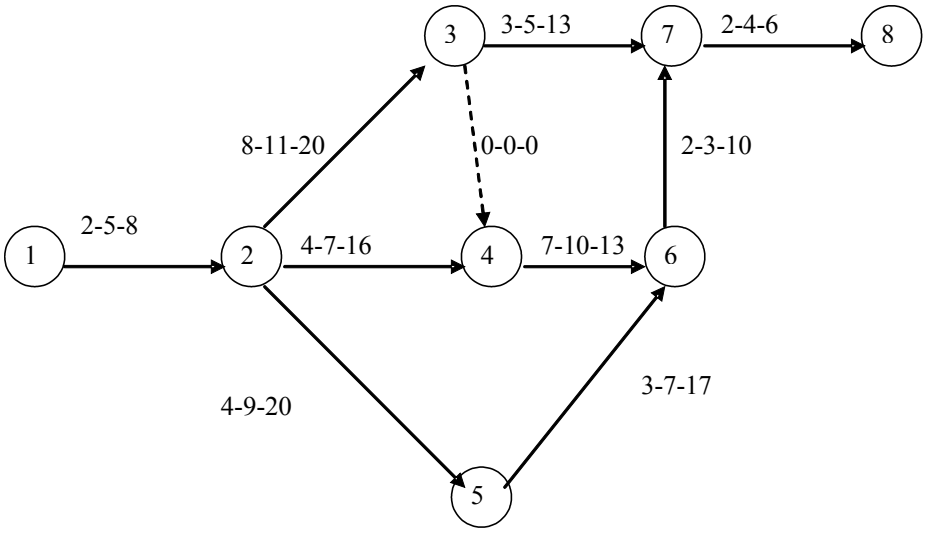

Figure 2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

NETWORK ANALYSIS AND SYNTHESIS

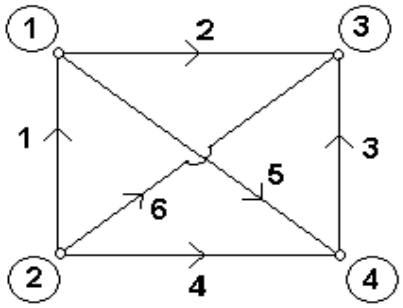
[Electrical and Electronics Engineering]

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

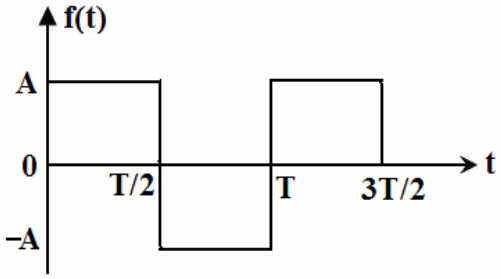
Answer any FIVE questions
All questions carry equal marks

1. a) Define:
i) Graph ii) Subgraph iii) A path iv) Loop v) Connected graph
vi) Oriented graph vii) Tree.

b) Obtain the incidence matrix for the graph shown below. Take node 4 as reference node.

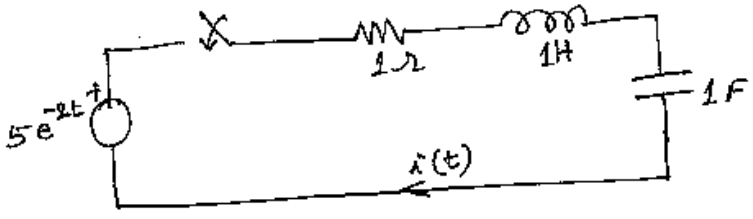


2. a) Find the Fourier series expansion of the following wave form.

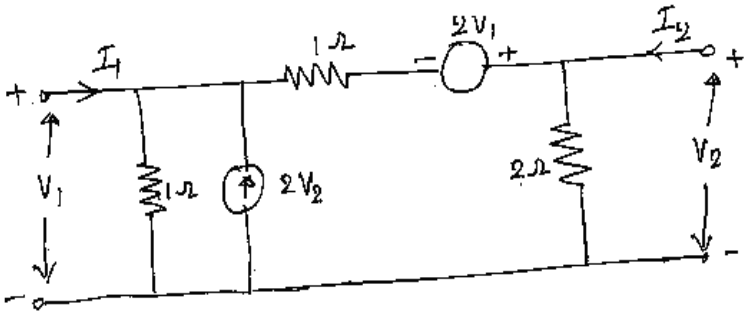


b) Find the RMS value of the voltage wave
v(t) = 15 + 30 Sin(ωt+15) + 45 Sin(3ωt + 30) + 60 Sin(5ωt+45)

3. Determine the current i(t) in the network shown figure below, using Laplace transform method.

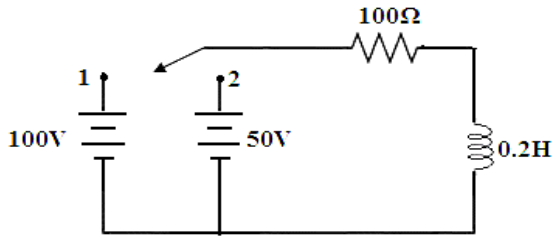


4. Determine Y and Z parameters for the network shown below in the figure.



5. a) Derive the equation for the transient current i(t) in a series RC circuit excited by a step input of V volts, at time t=0. Assume zero initial voltage across the capacitor.

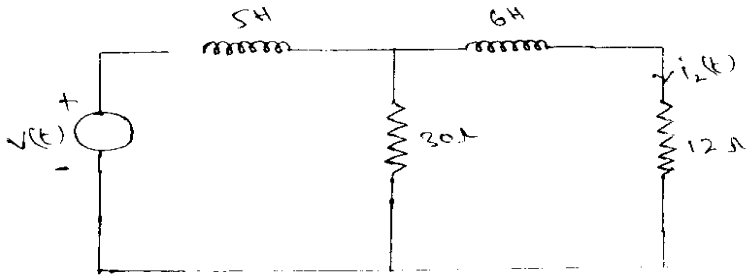
b) In the circuit shown below, the switch is closed on position 1 at t=0 there by applying the 100V source to the R-L branch, and at t=500 microseconds, the switch is moved to position 2. Obtain the equations for the current in both intervals using 2aplace transform techniques.



6. a) Derive the equation for the transient current i(t) in a series RC circuit excited by a sinusoidal voltage source **v(t) = V_m Sin ωt**, at time **t=0**. Assume zero initial charge across the capacitor.

b) A series RLC circuit with R=2 ohms, L=1H and C= 1F has a sinusoidal voltage source **v(t) = 250 Sin 500t** applied at time t=0. Determine the transient current i(t). Assume zero initial conditions.

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



8. a) What are the properties of Hurwitz polynomials?

b) Realize the following LC impedance function in First Foster form
$Z(S)=4(S^2+1)(S^2+9)/S(S^2+4)$.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

ELECTRO MAGNETIC FIELDS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) An infinity long, uniform line charge is located at y =6, z = 10, if ρ_L = 40n C/m. Find $\overline{E}$
   i) at the origin and
   ii) at P_B (0, 12, 2).
   b) Explain Maxwell's first equation in integral form and point form.

2. a) Derive the expression for electric field due to a dipole.
   b) Given the potential field V = 50 xyz V in free space. Find the total energy stored within the cube 0<xyz<2.

3. a) Explain in detail about polarization in dielectric materials.
   b) Derive the expression for capacitance of a parallel plate capacitor with two different dielectric materials.

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

5. State and Prove Amperes circuital law. Explain the few applications.

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

7. a) Explain the terms self and mutual inductance of a inductive circuit.
   b) Derive the Neumanns formulae.

8. Write four Maxwell's equations in
   i) point form ii) integral form for time varying fields.
   Explain the Significance of each equation.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

GENERATION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Discuss how GRID system has evolved. Mention its advantages.

2. Draw the schematic arrangement of hydro electric power station and explain its principle of operation.

3. a) What are the factors to be considered for selection of the site for a thermal power plant?
b) Explain why pulverised fuel is preferred.

4. a) What are the advantages of nuclear power plant?
b) Explain the types of nuclear reaction.

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. a) Name the various components present in a substation and explain them.
b) Draw a single line diagram of layout of an outdoor substation.

7. a) Discuss about various factors which influence the economics of power generation.
b) The monthly readings of a consumers meter are: minimum demand =50 kw; energy consumed = 36 mwhr; reactive power = 23.4 mvar. If the tariff is Rs.80/kw of maximum demand plus 8 paise/unit plus 0.5 paise/unit for each 1% of power factor below 86%. Calculate the monthly bill of the consumer.

8. Give the best values of capacitor banks to improve the load P.f. from 0.7 to 0.95 from the following data: Load 750 kVA, operating voltage 3.3kV for (i) Star connection (ii) Delta connection.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

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 three essential systems of electrical Indicating Instruments.
b) A Moving Coil milli Voltmeter has a resistance of 20 **Ω** and a full scale deflection of 120^0 is reached when a potential difference of 100mV is applied across its terminals. The moving coil has the effective dimensions of 3**.**1 cm **x** 2.6 cm and is wound with 120 turns. The flux density in the gap is 0.15Wb/m^2. Determine the control Constant of the spring and diameter of the copper wire for coil winding if 55 percent of total instrument resistance is due to coil winding. P for copper=1**.**73**x**10^{-8} Ωm.

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

3. a) Explain the measurement of power using Three wattmeter method.
b) Two wattmeters connected to read the total power in a 3 phase system supplying a balanced load read 10**.**5 KW and **-**2**.**5KW respectively. Calculate the total power and power factor. Also explain the significance of :
(i) equal wattmeter readings and (ii) Zero reading on one wattmeter.

4. a) Explain the construction and working of maximum demand indicator.
b) Explain the procedure for testing energy meter by phantom loading using RSS meter.

5. a) Explain about the measuring of resistance for a DC potentiometer.
b) A Crompton potentiometer consists of a resistance dial having 15 steps of 10**Ω** each and a series connected slide wire of 10**Ω** which is divided into 100 divisions. If the working current of the potentiometer is 10mA and each division of slide can be read accurately up to 1/5 of its span, calculate the resolution of the potentiometer in volt.

6. a) Explain the measurement of resistance using Wheatstone bridge.
b) Explain about Loss of charge method for the measurement of High resistance.

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: **R_1=235kΩ, C_1=0.012μF; R_2=2.5kΩ; R_3=50kΩ**. Find the series equivalent of the unknown impedance.

8. a) Explain the principle, construction and operation of a Ballistic Galvanometer.
b) Write short notes on Q-meter.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

TRANSFORMERS AND INDUCTION MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the operation of a single phase transformer, explaining clearly the function of different parts. Why cores of transformers are laminated?
b) A 1500/100V, 50Hz, single phase transformer is built on a core having an effective cross-sectional area of 150cm^2 and has 80 turns in low voltage winding. what is the (i) maximum flux density in the core and (ii) the number of turns in the HV winding.

2. a) Develop the exact equivalent circuit of a single phase transformer and describe the necessary tests to determine the constants of the equivalent circuit.
b) A 100 kVA transformer with unity p.f. has a full-load loss of 3kW, the losses being equally divided between iron and copper. During a day, the transformer operates on full-load for 3 hours, half-load for 4 hours and negligible load for the remaining day. Calculate the All-day efficiency.

3. a) Why parallel operation of transformers is required? Explain the parallel operation of two transformers with unequal voltage ratings.
b) Explain the method of predetermining the efficiency of single phase transformers.

4. a) Describe the various poly phase transformer connections with neat winding and phasor diagrams.
b) Explain the operation of V - V connected transformer. Also calculate the KVA rating of V - V connection.

5. a) Explain the constructional details of a 3-phase slip ring induction motor.
b) A 4-pole, 50Hz squirrel cage induction motor runs on no load at a shaft speed of 1440 rpm. Calculate the percentage slip and the frequency of induced current in the rotor.

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. a) Explain the starting methods of 3φ induction motors.
b) Find the ratio of starting current to full load current for a 10kW, 400V 3φ induction motor with a star - delta starter if the full load efficiency is 0.86, the full load power factor is 0.8 and short circuit current is 30A at 100V.

8. a) Why speed control of induction motors is require? What are the methods of speed control of Induction motors and enumerate their merits and limitations.
b) Explain the principle operation of induction generators.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

PRINCIPLES OF ELECTRICAL ENGINEERING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define and obtain open circuit admittance parameters by taking any one example.
b) A two port network has the following parameters $\mathbf{Z_{11}=20\ \Omega, Z_{12}=5\ \Omega, Z_{21}=20\ \Omega, Z_{22}=15\ \Omega}$. Calculate short circuit parameters.

2. a) Differentiate between constant-k filters and m-derived filters.
b) Design a high pass filter with a cut-off frequency of 1kHz with a terminated design impedance of 800**Ω**.

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

4. a) Derive the emf equation of a DC Generator.
b) Draw the load characteristics of the DC generator.

5. a) What are advantages of poly phase system over single phase system? Explain.
b) A 230V, 3-phase, 10KW induction motor has an efficiency of 62% at quarter load with 0.45 p.f. lag. The input measured by two wattmeter method. What will be the readings of these two wattmeter's? Show the connections of these wattmeter's indicating the polarity.

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) Derive the equation of emf induced in the alternator.
b) Explain in detail about squirrel cage induction motor.

8. Write short notes on the following:
a) AC Servo motors
b) Shaded pole motor
c) Synchros

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CODE No.:10BT40301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

KINEMATICS OF MACHINERY

[Mechanical Engineering]

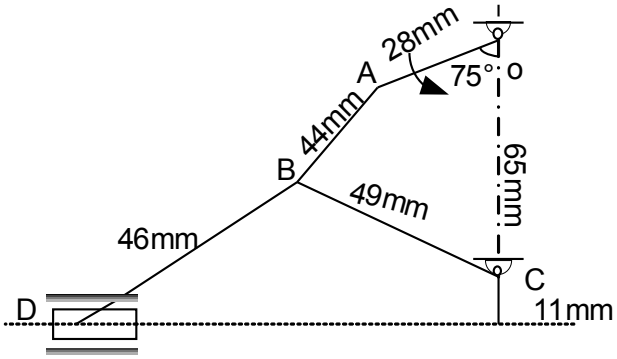
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between a structure and a machine.
b) Give sketches and brief descriptions of each of the three mechanisms derived from the double crank chain by fixing different links.

2. a) Sketch a pantograph, explain its working and show that it can be used to reproduce to an enlarged scale of a given figure.
b) Describe the Watt's parallel mechanism for straight line motion and derive the condition under which the straight line is traced.

3. a) What is coriolis acceleration? Determine the coriolis acceleration.
b) In figure the angular velocity of crank OA is 500 rad/sec, determine the linear velocity of slider D and the angular velocity of a link BD, when the crank is inclined at an angle of 75° to the vertical. The dimensions of the various links are 0A = 28 mm, AB = 44 mm, BC = 49 mm, BD = 46 mm. The centre distance from the centers of rotation O and C is 65 mm. The path of travel of the slider is 11 mm below the fixed point C. The slider moves around a horizontal path and OC is vertical.



4. a) What is the condition for correct steering? Sketch and show the two main types of steering gears and discuss their relative advantages.
b) A car using Acker mann type steering gear as a wheel base of 2.7 m and track of 1.4m. The track rod is 1.15 m and each track arm is 0.14 m long. The distance between the pivots of front stub axiles is 1.23m. If the car is turning to the right, find the radius of curvature of the path followed by the inner front wheel for the correct steering.

5. a) What is meant by the pressure angle of cam? Upon what factors does it depend?
b) State the procedure to the profile of a cam when the form of the displacement curve for the follower is known.

6. a) State and derive the law of gearing.

b) A pinion having 20 involute teeth of module pitch 6 mm rotates at 200 r.p.m. and transmits 1.5 kW to a gear wheel having 50 teeth. The addendum on both the wheels is 1/4 of the circular pitch. The angle of obliquity is 20°.

Find i) The length of the path of approach ;

ii) The length of the arc of approach;

iii) The normal force between the teeth at an instant where there is only pair of teeth in contact.

7. a) Obtain an expression for the length of a chain.

b) Explain the phenomena of 'slip' and 'creep' in a belt drive.

8. a) Define a simple gear train with an example.

b) An epicyclic train is composed of a fixed annular wheel A having 150 teeth. Meshing with A is a wheel B which drives wheel D through an idle wheel C, D being concentric with A, wheels B and C are carried on an Arm which revolves clock wise at 100 r.p.m. about the axis of A and D. If the wheels B and D have 25 and 40 teeth respectively, find the number of teeth on C and the speed and the sense of rotation of C.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

THERMAL ENGINEERING - I

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the working of otto cycle with help of p-v diagram and T-S diagram.
b) An engine working on otto cycle is supplied with air at 0.1MPa, 35^0C. The compression ratio is 8. Heat Supplied is 2100KJ/kg. Calculate the maximum pressure and temperature of the cycle. For air C_p=1.005, C_v=0.718 and R=0.287KJ/kg-K.

2. a) What are the fundamental differences between S.I and C.I engines?
b) Describe various methods used for scavenging of 2-stroke engines. List the advantages and drawbacks of a 4-stroke engine over a 2-stroke engine.

3. a) What are the four basic factors on which the knocking tendency of S.I engines depend?
b) What are the advantages of overhead valve combustion chambers over side valve combustion chambers?

4. a) What are the three phases of combustion in a S.I engine and explain them briefly?
b) What is squish motion?

5. a) Differentiate between open combustion chamber and divided combustion chamber used in a C.I. engine.
b) How a Diesel engine can be converted in to CNG engine?

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

7. a) Discuss the variation in volumetric efficiency of a reciprocating compressor with suction pressure.
b) For a reciprocating air compressor, show that the clearance volumetric efficiency,

$$\eta_{cv} = 1 + C - C\left(\frac{p_2}{p_1}\right)^{1/\gamma}$$, where C is the clearance factor.

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.

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CODE No.:10BT40303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

MANUFACTURING TECHNOLOGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is a pattern? What are different functions of patterns?
b) What are different moulding methods? Briefly explain each of them.

2. a) Sketch and explain the construction and operation of die casting process.
b) Explain cupola operation.

3. a) Explain the effect of polarity on penetration in DC arc welding with a neat sketch.
b) Explain the principle of arc welding with all the elements in the circuit.

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

5. a) Compare the properties of cold worked and hot worked parts with examples.
b) Distinguish between hot rolling and cold rolling.

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) What principles are normally considered good practice in the design of drop forgings?
b) How are tubes extruded? Explain with a sketch.

8. a) With a neat sketch discuss the working principle of ultrasonic machining process.
b) With a neat sketch discuss the working principle of Electrochemical machining process.

CODE No.:10BT40401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

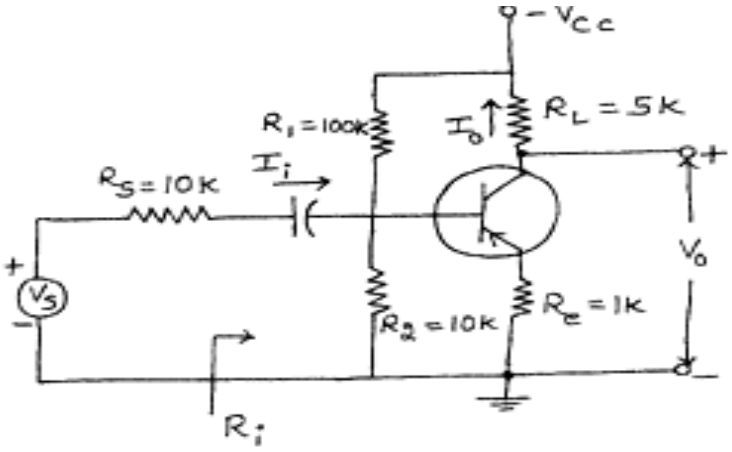
ELECTRONIC CIRCUIT ANALYSIS

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

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

Answer any FIVE questions
All questions carry equal marks

1. For the transistor amplifier shown below, Compute $\mathbf{A_I = I_o / I_i}$, $\mathbf{A_v}$, $\mathbf{A_{vs}}$ and $\mathbf{R_i}$.
Assume $\mathbf{h_{ie}}$ = **1100 ohms,** $\mathbf{h_{fe} = 50}$, $\mathbf{h_{re} = 2.5 \times 10^{-4}}$ $\mathbf{h_{oe} = 24}$ **uA/V**



2. Derive expressions for Current gain, Voltage gain, Input Resistance and Output Resistance of Darlington amplifier.

3. a) Derive the expressions of Gain Bandwidth product for voltage and current.
b) A transistor amplifier in CE configuration is operated at High frequency with the following specifications $\mathbf{f_T = 6\ M\ Hz;\ g_m = 0.04;\ h_{fe} = 50\ ;\ r_{bb'} = 100\ ohm\ ;\ R_s = 500\ ohm;\ C_{b'c} = 120\ pf;\ R_L = 100\ ohm}$. Compute the Voltage gain, upper 3dB frequency and gain bandwidth product.

4. a) Explain the analysis of a Common source amplifier with resistive load.
b) For a common gate amplifier, $\mathbf{g_m = 2.8mS,\ r_d = 50K\Omega,\ R_D = 5.1K\Omega,\ R_S = 1K\Omega.}$ Calculate input impedance, output impedance and voltage gain of the amplifier.

5. a) Compare Different types of Feedback topologies, explain with diagrams.
b) Derive the expression voltage gain of current series feedback amplifier.
c) An amplifier has a voltage gain of 300. f_1=50Hz, f_2= 200Hz and distortion is 10 % without feedback. Find f_{1f}, f_{2f} and D_f when negative feedback applied with feedback ratio of 0.01.

6. a) State and explain the Barkhausen's criterion for Oscillations.
b) What is the main difference between an amplifier and an Oscillator?
c) A Crystal oscillator has the following parameters. L = 0.33H, C_1 = 0.065pF, C_h = 1.0pF and R = 5.5KΩ. Find the series resonant frequency and Q - factor of the crystal.

7. a) Explain the operation of a Class - B complementary symmetry power amplifier and deduce the expression for maximum efficiency.

b) Prove that in a class - A power amplifier, if distortion is 10%, power given to the load is increased by 1%.

8. a) What are the requirements of a tuned amplifier?

b) Design a single tuned amplifier for the following specifications. Centre frequency of 500 KHz and a Band width of 10KHz. Assume the transistor parameters $g_m = 0.04S$, $h_{fe} = 100$, $c_{b'e} = 1000pF$, $C_{b'c} = 100pF$. The bias network and input resistance are adjusted such that $R_i = 4K\Omega$ and $R_L = 510\Omega$.

CODE No.:10BT40402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

PULSE AND DIGITAL CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the expression for rise time of integrating circuit and prove that it is proportional to time constant and inversely proportional to upper 3 dB frequency.
b) A square-wave whose peak-to-peak value is 1 V extends ± 0.5 V with respect to ground. The duration of the positive section is 0.1 sec and of the negative section 0.2 sec. If this waveform is impressed upon an RC differentiating circuit whose time constant is 0.2 sec, what are the steady - state maximum and minimum values of the output waveform?

2. a) The circuit of Fig. 1 shown below is used to square a 10 KHz input sine wave whose peak value is 50V. It is desired that the output voltage waveform be flat for 90% of the time. Diodes are used having a forward resistance of 100 Ω and a backward resistance of 100K.
i) Find the values of $\mathbf{V_{R1}}$ and $\mathbf{V_{R2}}$.
ii) What is a reasonable value to use for R?

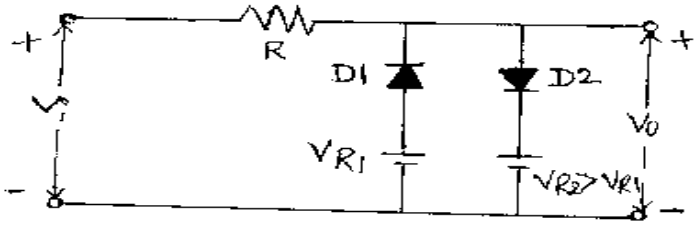


Fig. 1

b) List the applications of voltage comparators.

3. a) Define the following terms:
i) storage time; ii) delay time; iii) rise time; iv) fall time.
b) Explain the behavior of a BJT as a switch. Give Applications.

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

5. a) Define the following:
i) Sweep-speed error ii) Displacement error iii) Transmission error
b) Explain the principle and working of a transistor current time base generator.

6. a) With the help a neat diagram, explain the working of a six-diode sampling gate.
b) What is pedestal? Draw and explain the sampling gate which cancel the pedestal.

7. a) Explain the concept of stability of relaxation divider with the help of diagram and wage forms.
b) Explain in detail the method of frequency division of sine wave with the sweep circuit.

8. a) Draw the circuit of diode transistor logic NAND gate and explain its operation.
b) Draw the circuit diagram of resistor transistor NOR gate for positive logic and explain its operation.

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CODE No.:10BT40403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

ELECTRO MAGNETIC WAVES AND TRANSMISSION LINES

[Electronics and Communication Engineering]

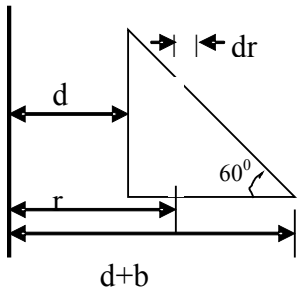
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) State and Prove Gauss law and explain its application through example.
b) Three co-axial cylindrical sheets of charge are present in space, of charge densities $5\mu \frac{C}{cm^2} at\ r = 3m$; $-2\mu \frac{C}{m^2} at\ r = 4m$ and $4\mu \frac{C}{m^2} at\ r = 6m$.
Find the displacement density at $r = 2m$ and $r = 6m$?

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) State Biot Savart's law.
b) Write down the Maxwell's two equation for magnetic static fields.
c) Determine the mutual inductance between a conducting triangle loop and very long straight wire as shown.



4. a) Define displacement current density.
b) Determine tangential and normal components of the boundary conditions for magneto static fields.
c) Derive the time varying Faraday's law and Ampere's circuital law from the point form of Maxwell's equations.

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) 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) Find the Characteristic impedance of symmetrical T network, the series arm impedance is (10+j30) and shunt arm impedance is (50-j100).
b) In a constant K band pass filter the ratio of the shunt arm capacitance tp the total series arm capacitance is 100:1. The frequency of resonance of both the arm is 100 KHz. Calculate the bandwidth of the filter.

8. Write short notes on the following:

a) Types of Transmission lines
b) Quarter wave transformer
c) Distortion less Condition in Transmission lines
d) Reflection coefficient and VSWR in transmission lines.

CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

SWITCHING THEORY AND LOGIC DESIGN

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Convert the following numbers.
a) $(1984)_{10}$ to base 8 b) 110010101.0101 to base 10
c) $(0.4375)_{10}$ to binary d) $(FACE)_{16}$ to binary e) $(1256)_8 = (X)_2$

2. a) Develop a circuit for the following Boolean expression using NAND gates.
Y = ((A+B)C)'D
b) Simplify the following Boolean functions to minimum no of literals
i) **(a+b)'(a'+b')'** ii) **BC'+A'B+BCD'+A'B'D+AB'C'D**

3. a) Determine the prime implicants of the function **F(A,B,C,D)=∑(0,2,4,5,6,7,8,10,13,15)**
b) Draw a NAND logic diagram that implements the compliment of the following function
F(A,B,C,D)= ∑m(0,1,2,3,4,8,9,12)

4. a) Design a SOP circuit that will generate an odd Parity bit for a 4 bit input.
b) Realize a Logic function using F(A,B,C)= ∑M(2,4,5,6) using Hazard Free logic gate network.

5. a) Distinguish the following
i) PROM ii) PAL iii) PLA
b) Implement the following Boolean function using PAL with AND-OR structure
F_1 (A,B,C,D)=∑m(2,12,13); **F_2 (A,B,C,D)=∑m(7,8,9,10,11,12,13,14,15)**
F_3 (A,B,C,D)=∑m(0,2,3,4,5,6,7,8,10,11,15); **F_4 (A,B,C,D)=∑m(1,2,8,12,13**

6. a) Describe the operation of the SR Latch using NAND gate with the help of truth table, transition table and the circuit.
b) Design a modulo-12 up synchronous counter using T flip-flops.

7. A sequential circuit has one input and one output and its state table shown below: Design the Sequential circuit with
a) T flip-flop b) RS flip-flop and JK flip-flop

Present State		Next state		Output	
		X=0	X=1	X=0	X=1
A	B	AB	AB	Y	Y
0	0	00	10	0	1
0	1	11	00	0	0
1	0	10	01	1	0
1	1	00	10	1	0

8. a) Explain how the ASM chart differs from a conventional flow chart.
b) Show the eight exit paths in an ASM block emanating from the decision boxes that check the eight possible binary values of three constant variables ***x, y*** and ***z***.

CODE No.:10BT40421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

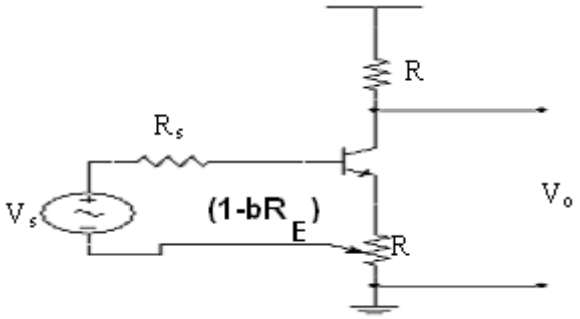
ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) For the circuit shown, find the voltage gain $\frac{V_0}{V_S}$ and input impedance as a function of R_S, b, R_e and R_L. Assume that $h_{oe}(R_e + R_L) \leq 0.1$.



b) Derive the expression for A_V in terms of A_I.

2. a) Explain the effect of coupling capacitor and emitter bypass capacitor on low frequency response of BJT amplifiers.
b) Write short notes on Gain Bandwidth product.

3. a) Draw the circuit of voltage shunt feedback and derive the expressions for input and output Resistance.
b) A negative feedback of 0.0005 is applied to an amplifier whose open loop gain is 60 db. If the open loop gain gets reduced by 12% how much the overall gain gets altered.

4. a) Draw the circuit diagram of a RC phase shift oscillator using BJT. Derive the expression for frequency of Oscillators
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) What are the advantages of push-pull system? Explain the operation of Class "B" push-pull amplifier with neat sketches.
b) A power transistor operating in Class "A" mode is to deliver a maximum of 5W to a 4 ohms load (R_L = 4 ohms). The quiescent point is adjusted for symmetrical clipping, and the collector supply voltage is V_{CC} = 20 V. Assume ideal distortion-less amplifier with V_{min} = 0 V. What is the transformer turns ratio used in the circuit? What is the operating point? What is the collector circuit efficiency?

6. a) Design a high pass circuit for three different time constants, low, high and medium. Assume a 4 kHz square wave with $4V_{p-p}$ is applied to the circuit. Draw the output waveforms for the time constants mentioned above.
b) Draw the transfer characteristics of double ended clipping circuit and explain its operation with suitable circuit diagram.

7. a) Explain the storage and transition times of the diode as a switch.
b) Explain breakdown voltage consideration of transistor.

8. Draw and explain about the response of Schmitt circuit for the following.
a) For loop gain <_1 b) loop gain >1.

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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 June - 2014

COMPUTER ARCHITECTURE AND ORGANIZATION

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

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

Answer any FIVE questions
All questions carry equal marks

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

2. a) What are register transfer logic languages? Explain few RTL statements for branching with their actual functioning.
b) Explain stack organization in detail.

3. a) What is the difference between the microprocessor and a microprogram? Is it possible to design a microprocessor with out a microprogram? Are all micro-programmed computers also microprocessors?
b) Explain difference between hard wired control and micro-programmed control. Is it possible to have a hardwired control associated with a control memory?

4. a) Discuss in detail about Vector processing.
b) Write about data hazards and instruction hazards.

5. a) Explain the memory hierarchy in detail.
b) Explain RAID.

6. Write about Full-duplex transmission and explain character oriented protocol with an example.

7. a) Explain the characteristics of a multiprocessor.
b) Explain about interprocessor communication and synchronization.

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 June - 2014

OBJECT ORIENTED PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the advantages of an object oriented programming paradigm?
b) Explain the about various types of inheritance used in OOP.

2. a) What is template? Explain template functions and classes.
b) What do you mean by polymorphism? Discuss run-time polymorphism.

3. a) Write a program to multiply two matrices.
b) Explain about String and StringBuffer classes in JAVA.

4. a) Differentiate abstract class and interface with suitable example.
b) Explain the use of ***super*** and ***this*** keywords in JAVA.

5. a) Explain how exception handling mechanism can be used in a JAVA program.
b) Give general form of a multileveled package statement. What is the significance of the CLASSPATH environment variable in creating/using a package?

6. a) Explain about demon threads in JAVA.
b) Write short notes on JAVA Applets.

7. a) What is the purpose of a LayoutManager 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) Describe about various components in Swings.
b) Explain about MVC architecture in Swings.

CODE No.:10BT40503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

PRINCIPLES OF PROGRAMMING LANGUAGES

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain language evaluation criteria and the characteristics that affects them.

2. a) Explain in detail about various design issues of character string types.
b) Explain associative arrays, their structure and operations.

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. a) Discuss the design issues of Subprograms.
b) What is a Subprogram? Explain about Generic Subprograms in detail.

5. a) Explain in detail about Binary Semaphores.
b) Explain data abstraction in Ada95.

6. a) How exception handling is carried out in C++?
b) What are the possible frames for exceptions in Ada?
c) How are exceptions bound to handles in C++?

7. a) Explain important features of LISP.
b) Explain the Sequence Control in Machine Learning.

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

CODE No.:10BT41001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

ELECTRICAL AND ELECTRONIC MEASUREMENTS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the construction and working of an attraction type Moving Iron instrument with a neat diagram. Derive the equation for deflection if the instrument is spring controlled.
b) The inductance of a certain moving iron ammeter is **$(8+4\theta-1/2\theta^2)$ μH**, where **θ** is the deflection in radian from the zero position. The control spring torque is **12×10^6 N-m/rad.** Calculate the scale positions in radian for currents **1, 2, 3, 4** and **5 A** and discuss the scale shape obtained.

2. a) Describe the construction and working of series type Ohmmeter with design equations.
b) Describe the construction and working of Co-ordinate type A**.**C**.** Potentiometer with a neat diagram.

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

4. a) Explain Maxwell's bridge for measurement of unknown inductance. Determine condition for balance and mention its applications.
b) The arms of an ac Maxwell bridge are arranged as follows: AB is a non- reactive resistor of 1kΩ in parallel with a condenser of capacitance 0.5 μF; BC is an non-reactive resistor of 600Ω; CD is an unknown inductive resistor; and DA is non- reactive resistor of 400Ω. If balance is obtained under these conditions, find the value of the resistance and inductance in CD.

5. a) Write a short note on rectifier type AC voltmeter.
b) Discuss about staircase ramp type Digital Voltmeter.

6. a) Write a short note on Digital Frequency meter.
b) What is a wave analyzer? Explain heterodyne wave analyzer with necessary sketch.

7. a) Explain, what is the Cathode-Ray Oscilloscope(CRO) and derive an expression for the vertical deflection on the screen of CRO in terms of length of plates, separation distance, accelerating voltage and distance of screen from the origin.
b) The X- deflection plate in a CRO are 15 mm long and 6 mm apart. The centre of the plates is 20 cm from the screen. The accelerating voltage is 2.5 kV. Determine the deflection sensitivity and deflection factor of the cathode ray tube.

8. a) Draw the block diagram of logic analyzer and explain its operation in detail.
b) Describe the basic components of a magnetic recorder with a neat diagram and explain its principle and operation.

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CODE No.:10BT41002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

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 (i) Gross Errors (ii) Systematic Errors (iii) Random Errors by giving suitable example. Discuss the means adopted to minimize these errors.
b) Define the standard. Explain briefly about different types of standards.

2. a) Define the following:
i) Reproducibility ii) Repeatability iii)Spa iv) Calibration
b) Explain the frequency response of second order systems.

3. a) Explain the construction and working of potentiometers.
b) Describe the construction and working of RTD.

4. a) Explain construction, working and applications of Synchros.
b) Explain the construction, working and applications of magnetostrictive transducer.

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 laws of thermocouple.
b) Write briefly about the pyroelectric effect.

7. a) Explain the charge amplifier and derive its output equation and frequency response.
b) Explain chopper amplifier.

8. a) Write short notes on magneto diodes and magneto transistors.
b) Explain in detail about Nanosensors.

CODE No.:10BT41201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

DATA COMMUNICATIONS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the seven layers of OSI protocol hierarchy.
b) What are the types of digital modulation techniques?
c) Comparison between Non-coherent ASK and coherent ASK.

2. a) Using suitable examples, explain in detail about different types of guided media.
b) Explain in detail the characteristics of transmission lines.

3. a) What is multiplexing? With a neat diagram explain FDM.
b) We have four sources creating 250 characters / sec. If the interleaved unit is one character and 1 synchronous bit is added to each frame, find:
i) The data rate of each source.
ii) The frame rate
iii) The duration of each frame
iv) The data rate of the link

4. a) List the advantages and disadvantages of microwave radio communications over cable transmission facilities.
b) Describe the following terms and how they relate to radio wave propagation:
i) refraction ii) reflection
iii) diffraction iv) interference

5. a) Sketch the channel interleaving scheme for time division multiplexing the following PAM channels:
Five 4 KHz telephone channels and one 20 KHz music channel.
b) Explain the difference between telephone and leased line communication channels.

6. a) Describe the characteristics and applications of cellular and cordless technologies.
b) What is Hand-off in cellular telephony? List and explain about each type of hand-off in detail.

7. a) Briefly describe the following error detection schemes:
i) Single precision checksum ii) double precision checksum
iii) Honeywell checksum and residue checksum
b) What is a bar code? Describe discrete bar code, continuous bar code and 2D bar code.

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 June - 2014

COMPUTER GRAPHICS AND MULTI-MEDIA SYSTEMS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the construction of cathode ray tube monitor.
b) Write about overview of graphics systems.
c) Describe any two hard copy devices.

2. Explain the Bresenham's line drawing algorithm in 2D. Hence give the pixel positions for the line joining the points (4, 4) and (9, 9).

3. a) Obtain a transformation matrix for rotating an object about a specified pivot point.
b) Find the reflection of a triangle with vertices at (4,10), (6,12) and (4,12) about the line y=x+5.

4. a) Write Liang Barsky line clipping algorithm with an example.
b) Write an algorithm to split a conclave polygon using the vector method.

5. a) Give the steps involved in viewing pipe-line. Explain briefly about each stage of operation.
b) What is meant by 3D object representation? What are two ways of representing an object?

6. a) Explain multimedia system architecture.
b) Briefly explain about multimedia databases.

7. a) Why is an electronic pen a more natural means of input? Describe the operation of a pen system.
b) Explain where and why you would use magnetic storage in a multimedia system.

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 June - 2014

CONTROL SYSTEMS

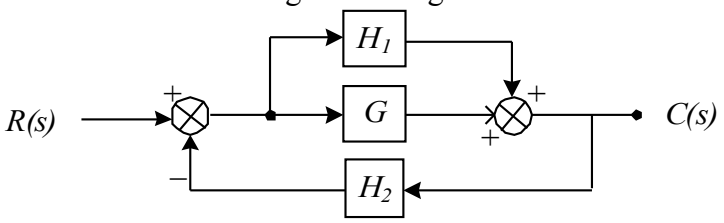
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Compare positive and negative feedbacks control system.
b) Draw the closed loop block diagram of DC servo motor.

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) A unity positive feedback control system has the plant $G(s) = \frac{k}{s(s + \sqrt{2k})}$. Find the rise time, percentage overshoot, peak time and settling time for a unit step input. For what range of k is the settling time less than 1 second?
b) Explain the effect of proportional, integral and Derivative control on the closed loop system.

4. a) Explain how relative stability can be assessed using RH criterion.
b) Draw root locus if $G(s).H(s)$ is $\frac{K}{s(s+1)}$; K is varying from **O** to ∝.

5. Obtain the bode plot for the transfer function $G(s) = \frac{2(s+2)}{s(s+6)(s+12)}$. From the bode plot, obtain phase margin and gain margin.

6. a) Determine the maximum value of k which makes the transfer function $G(s) = \frac{k}{s(s^2 + s + 4)}$ stable.
b) A unity feedback system with $G_C(s) = K$ has $G(s) = \frac{10e^{-0.1s}}{(s+4)}$. Select a gain K so that the phase margin of the system is 40^0. Determine the gain margin for the selected gain K.

7. a) List out the characteristics of lag compensator.

b) Design a phase lead compensator for the system shown in Fig. (b) to satisfy the following specifications.

i) The phase margin of the system ≥ 45°

ii) Steady state error for a unit ramp input ≤ 1/15

iii) The gain cross over frequency of the system must be less than 7.5 rad/sec.

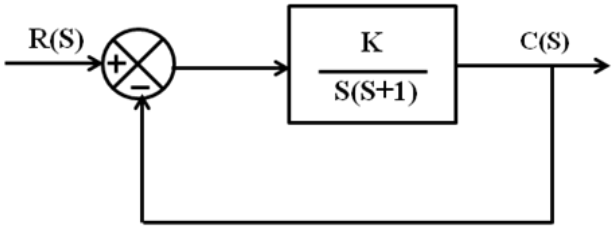


Fig. (b)

8. Given the transfer function:

$$G(s) = \frac{2}{(s + 12)^2}$$

Write the state transition matrix.

CODE No.:10BT42302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

ANALYTICAL TECHNIQUES IN BIOTECHNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain types of analytical methods, uncertainties in instrumental measurements and Signal to noise ratio.

2. Write note on theory and principle of microscopy and discuss on parts of microscope.

3. Give a detailed account on principle and applications of Atomic Absorption Spectroscopy.

4. Write in detail principles and applications of circular dichroism and X-ray diffraction.

5. Discuss on detail about T L C and paper chromatography.

6. Explain the methods of aminoacid sequencing and explain how HPLC aids in this method.

7. Discuss on applications of optical rotatory dispersion and circular dichroism analysis to protein and polypeptide structure.

8. Explain the principles of electron microscopy and write its applications.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write in detail about asymptotic notations for expressing the time complexities of algorithms.
b) Solve the following recurrence relation:

$T(n) = 1, \quad \text{if } n=1$

or

$T(n) = T(n-1) + n(n-1), \text{ if } n \geq 2$

2. a) Write difference between BFS and DFS.
b) Explain the DFS 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 method of reduction to solve TSP problem using Branch and Bound.
b) Explain the principles of FIFO Branch and Bound.

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 no. of operations required for the following chain matrix multiplication using dynamic programming.
A(30,40) * B(40,5) * C(5,15) * D(15,6).

6. a) Draw the state space tree for m coloring when n=3 and m=3.
b) Write a recursive backtracking algorithm.

7. Describe detail about LC Branch and Bound solution.

8. State and Prove Cook's theorem.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

MICRO-PROCESSOR AND INTERFACING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the function of following registers in 8086 microprocessor.
   i) AX, BX, CX, DX
   ii) CS, DS, SS, ES
   iii) BP, SP, SI, DI
   iv) IP and Instruction Queue
   b) Discuss about the operating frequency and memory addressing capability of 8086 microprocessor.

2. a) Write an ALP to exchange two blocks of 8 bit numbers using MOVSB and STOSB instructions.
   b) Write an ALP in 8086 to add two 8 bit decimal numbers.

3. a) Draw the pin diagram of 8086 in the maximum mode of operation and explain briefly about the function of each pin.
   b) Explain the need for DMA. Discuss in detail about DMA data transfer method.

4. a) Interface a 4x4 keyboard with 8086 using 8255 and write an ALP for detecting a key closure and return the key code in AL. The denouncing period for a key in 10ms. Use software key bouncing technique.
   b) Draw a typical key board interface with 8255 and write the program to detect the key closure.

5. a) Discuss priority of interrupts of 8086 Microprocessor.
   b) Discuss Initialization Command Word (ICW) formats of 8259 Programmable Interrupt Controller.

6. a) Discuss types of serial communication.
   b) Write an 8086 instruction sequence to receive 20 characters using 8251 USART and store them in memory.

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

8. a) Discuss about various addressing modes of 8051.
   b) Explain the internal and external program memory as well as data memory of 8051 with the diagram showing their capacities.

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

OPERATING SYSTEMS

[Information Technology]

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

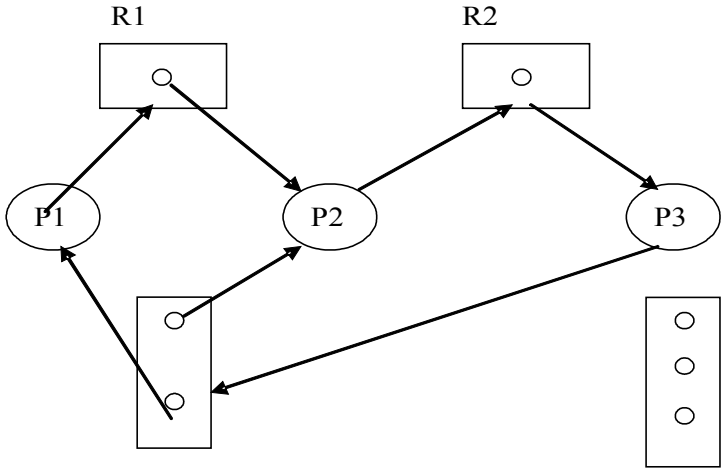
Answer any FIVE questions
All questions carry equal marks

1. a) What is an Operating System? Explain different functions of an operating system.
b) Write about different types of memory.

2. a) What are different types of scheduling queues? Explain how scheduling queues are used in schedulers.
b) Explain Round-Robin scheduling algorithm with an example.

3. a) What is critical section problem? What are the requirements to be satisfied for critical section problem to be solved.
b) Write about monitors for process synchronization.

4. a) Explain any two solutions for recovery from deadlock.
b) Explain the resource allocation graph and check whether the deadlock is available or not in the following resource allocation graph.



5. Write in detail about memory management techniques paging and segmentation.

6. a) Write about different directory structures.
b) Explain different disk free space management methods.

7. a) Write about interrupts.
b) Write about kernel I/O subsystem.

8. a) What are the possible ways of implementing the access matrix?
b) Explain about user authentication.

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CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

THEORY OF COMPUTATION

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write and explain the properties of transition function.
b) Prove that for any transition function δ and for any two input strings x and y, δ (q; xy) = δ (δ (q; x); y).
c) Define Finite Automata and Transition diagram.

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. Give the definition for the following terms
i) NFA ii) DFA iii) Transition diagram
iv) Regular Expression v) Restricted Turing machine vi) NTM

4. a) Prove that the CFG G1 with productions.
S_1→S_1+T/T
T→T*F/F
F→(S_1)/a is unambiguous
b) Draw NFA accepting the language generated by the grammar with productions.
S→abA/bB/aba
A→b/aB/bA
B→aB/aA
c) Find CFG's generating each of these languages.
i) **$\{a^i b^j c^k / i \neq j+k\}$**
ii) **$\{a^i b^j c^k / j \neq i+k\}$**

5. a) If L_1 is a CFL and L_2 is a RL.Then $L_1 \cap L_2$ is a CFL prove it.
b) Let G be the grammar with productions.
S→AACD
A→aAb/Λ
C→aC/a
D→aDA/bDb/ Λ convert into Chomsky normal form.
c) Explain and simplified of forms and Normal forms.

6. If a Context Free Grammar *G* is language contains at least one string other than ε, then there is a grammar G_1 in Chomsky Normal form, such that **$L(G_1)$= L(G)-{ε}.**

7. a) What is delta of a Turing Machine? Explain functions involved in a move of Turing Machine in detail.
b) Design Turing Machine to accept even palindromes derived from the input {a,b}. Give its Transition table and diagram also.

8. Prove the directed Hamilton-circuit problem in NP-complete.

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

PROBABILITY AND STATISTICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) 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)?

b) 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. If X and Y are independent Poisson variates, such that, P(X=1) = P(X=2) and P(Y=2) = P(Y=3). Find the variance of X-2Y.

3. a) Find the coefficient of correlation between industrial production and Export from the following data:

Production(X)	55	56	58	59	60	60	62
Export(Y)	35	38	37	39	44	43	44

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 parameter and statistic? Explain using examples.

b) Suppose we have a population of size 5, consisting of: 1, 2, 3, 4 and 5.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 fatility 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) A sample of size 16 has mean 30 with standard deviation of 5. Assuming normality test. Test the hypothesis $\mu = 32$ hours against the alternative hypothesis $\mu \neq 32$.

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

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

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

7. The height of certain 10 cone is: 11.2, 10.7, 13.1, 12.3, 10.1, 17.8, 11.9, 15.4, 13.3, and 16.8 inches. Can we say that the process is in state of statistical quality control?

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

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

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

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

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ENVIRONMENTAL SCIENCES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write the role of Hydrosphere in shaping the biosphere.
b) Write an essay on the role of Public in environmental protection.

2. a) Write an essay on Natural Resources.
b) Discuss the pattern of Global food production and its consumption.

3. a) What is mean by food web and food chain? Explain with suitable examples.
b) Discuss the various forms of ecological successions.

4. a) Describe the importance and values of biodiversity.
b) Explain in-situ and ex-situ conservation of biodiversity with examples.

5. a) How the Ozone in the atmosphere is getting depleted. Give the sources and adverse effect of Green House gases.
b) Write the major water pollutants and how the same can be controlled.

6. a) What is meant by sustainable development?
b) Explain the following:
i) Green house effect and Global warming; ii) Acid rains

7. Explain the following:
a) What are the environmental protection acts?
b) Discuss the controlling measures of acts.

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 January - 2014

OPTIMIZATION TECHNIQUES

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain various steps involved in formulation of objective function and constraints.
b) What are the limitations of classical optimization problems?

2. a) Determine the extreme points of the function $\mathbf{f(x) = 12x^5 - 45x^4 + 40x^3 + 5}$.
b) Give the necessary conditions to find the minimum of a function **f(x, y)** subject to $\mathbf{g(x_1, x_2)}$ using lagrange multiplier method.

3. Solve the following by simplex method

Maximize $F = x_1 + 2x_2 + x_3$

Subject to

$2x_1 + x_2 - x_3 \leq 2$

$-2x_1 + x_2 - 5x_3 \geq -6$

$4x_1 + x_2 + x_3 \leq 6$

$x_1 \geq 0, x_2 \geq 0, x_3 \geq 0$

4. State various steps involved in Least - cost method and apply it in obtaining initial feasible solution to the following transportation problem.

	D_1	D_2	D_3	D_4	Capacity
O_1	1	2	3	4	6
O_2	4	3	2	0	8
O_3	0	2	2	1	10
Demand	4	6	8	6	

5.

a) Minimize the function $f = x_1 - x_2 + 2x_1^2 + 2x_1x_2 + x_2^2$ starting from the point $x_1 = \begin{Bmatrix} 0 \\ 0 \end{Bmatrix}$ along the direction $S = \begin{Bmatrix} -1 \\ 0 \end{Bmatrix}$ using the quadratic interpolation method with an initial step length of **0.1**.

b) Find the minimum of the function $\mathbf{f = \lambda^5 - 5\lambda^3 - 20\lambda + 5}$ by Fibonacci search in the internal **(0,5)**.

6. a) Indicate the number of one-dimensional steps required for the minimization of the function $f = x_1^2 + x_2^2 - 2x_1 - 4x_2 + 5$ according to Powell's method.

b) Consider the minimization of the function $f(x_1, x_2) = 6x_1^2 + 2x_2^2 - 6x_1x_2 - x_1 - 2x_2$.

If $S_1 = \begin{Bmatrix} 1 \\ 2 \end{Bmatrix}$ denotes a search direction, find a direction S_2 which is conjugate to the direction S_1.

7. Construct the ϕ_k function, according to (a) interior and (b) exterior penalty function methods and plot its contours for the following problem:

Maximize **f = 2x**

Subject to **2 ≤ x ≤ 10**

8. a) Explain multi-stage decision process.

b) Solve the following linear programming problem by Dynamic programming:

Maximize $\boldsymbol{Z = 2x_1 + 3x_2}$

Subject to $\boldsymbol{x_1 - x_2 \le 1}$, $\boldsymbol{x_1 + x_2 \le 3}$ and $\boldsymbol{x_1 \ge 0}$, $\boldsymbol{x_2 \ge 0}$.

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Mechanical Engineering, Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. What is meant by Demand Forecasting? Critically Examine the various methods of demand forecasting.

2. Explain the Internal and External Economies of Scale.

3. What is meant by Perfect Competition? Explain the features of perfect competition.

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

5. Prepare Journal Entries and Ledger Accounts for the following transactions

S. No.	Date	Transaction Details
1.	01-03-2012	Mr. Venkatesh started business with cash Rs.5,00,000 and also introduced buildings worth Rs.4,00,000 into business
2.	05-03-2012	Sold goods Rs.7,000 on cash to Mr.Ramu
3.	07-03-2012	Purchased goods worth Rs.9,000 on credit from Mr.Ramesh
4.	10-03-2012	Paid Income Tax Rs.15,000
5.	12-03-2012	Received a discount of Rs.2,000 from Mr.Ramesh
6.	14-03-2012	Allowed a discount of Rs.500 to a customer.

6. Prepare Profit and Loss Account from the following particulars

Gross Profit	Rs.5,00,000	Office Maintenance	Rs.25,000
Rent Received	50,000	Office Lighting	10,000
Interest Received	75,000	Office Rent	25,000
Discount Received	50,000	Stationery Expenses	39,000
Legal Expenses	10,000	Telephone bill	2,500
Auditor Fee	15,000	Internet Services Monthly Rent	3,000
Municipal Taxes	10,000	Fuel Expenses	5,000

7. Discuss the various types of Capital. The following are the cash inflows and Cash outflows of a project over a period of 5 years. You are required to assess the Pay Back Period (PB) and Internal Rate of Return (IRR) of the project.

Cash Outflow	Rs.3,00,000	
Cash Inflows		Rs.10,000
In Year 1		15,000
In Year 2		17,000
In Year 3		14,000
In Year 4		8,000
In Year 5		9,000

8. Define Tally. State the characteristic feature of Tally.

CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define mass density, specific weight, specific gravity and specific volume.
b) Explain Compressibility and Bulk Modulus.
c) A U-tube manometer containing mercury was used to find the negative pressure in the pipe, containing water. The right limb was open to the atmosphere. Find the vacuum pressure in the pipe, if the difference of mercury level in the two limbs was 100 mm and height of water in the left limb from the centre of the pipe was found to be 40 mm below.

2. a) State and Prove Bernoulli's Theorem.
b) In a three dimensional incompressible flow the velocity components in the x and y directions are $\mathbf{u = x^2 + 2z^2 + 8}$ and $\mathbf{v = 2y^2 + z^2 - 6}$. Find the velocity component in the z direction.

3. a) Obtain the condition for maximum efficiency in transmission of power through a pipe line.
b) A Venturimeter is to be fitted in a pipe of 20 cm diameter where pressure head is 7.6 m of flowing fluid and the maximum flow is 8100 lit per minute. Find the least diameter of the throat to ensure that the pressure head does not become negative. Presume discharge co-efficient for the meter is 0.96. What is the quantity of liquid flowing through it when a differential manometer shows a steady deflection of 20 cm of mercury?

4. a) Explain the significance of word 'free' in Impact of free jets.
b) Derive an expression for the force exerted by the jet on a moving flat plate.
c) A nozzle of 5 cm diameter delivers a stream of water at 20 m/s perpendicular to a plate that moves away from the jet at 5 m/s. Find the force on the plate, the work done and the efficiency of the jet.

5. a) What do you understand by mass inflow curve and how is it prepared?
b) A turbine develops 9000 kW power when running at 100 r.p.m. The head on the turbine is 30 m. If the head on the turbine is reduced to 18 m, determine the speed and power developed by the turbine.

6. a) Draw a neat sketch of a Francis turbine and explain the functions of each component.
b) A Kaplan turbine is to be designed to develop 10000 HP. The net available head is 10 m. Assume speed ratio as 1.8 and flow ratio 0.6. If the overall efficiency is 70 % and diameter of the boss is 0.4 times the diameter of the runner, find the diameter of the runner, its speed and specific speed.

7. a) Explain the governing mechanism for a Pelton Wheel with the help of neat sketch.
b) A hydraulic turbine under a head of 27 m develops 7357.5 kW running at 120 rpm. What is the specific speed of the turbine? What type of turbine is this? Also find the normal speed and output if the head on the turbine is reduced to 20 m.

8. a) Explain the classification and working of a reciprocating pump.
b) What is multistage centrifugal pump and describe it in series and in parallel?

CODE No.:10BT40101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

STRUCTURAL ANALYSIS - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A plane element is subjected to stresses as shown in Fig.1. Determine the principal stresses, maximum shear stress and their planes. Use Mohr's Circle Method.

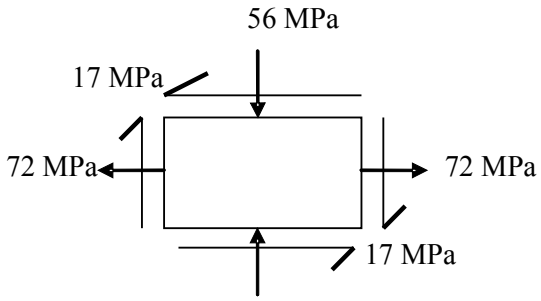


Fig.1

2. Find the deflections at points C and D for a beam loaded as shown in Fig.2, using Macaulay's method. EI is constant.

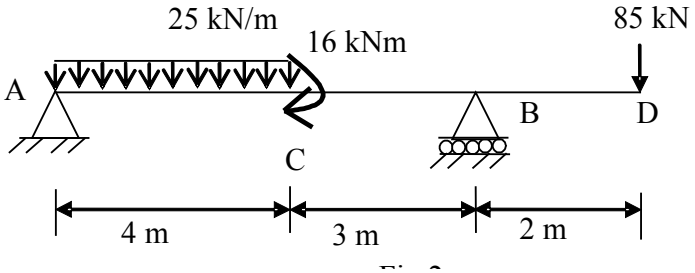


Fig.2

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. Sketch the BMD and SFD for the fixed beam AB of span 6m, subjected to a couple 15kN.m at mid span. The flexural rigidity of left half span is twice that of right hand side remaining span (EI).

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

6. a) Derive the formula to find shear centre for a symmetrical channel section, from first principles.

b) Find the approximate location of shear centre for a symmetrical channel section having overall depth of 280 mm. Thickness of web and flanges is 22 mm.

7. Analyze the fixed beam shown in Fig.3 and draw shear force and bending moment diagrams. Find the distance of the points of contra-flexure from supports.

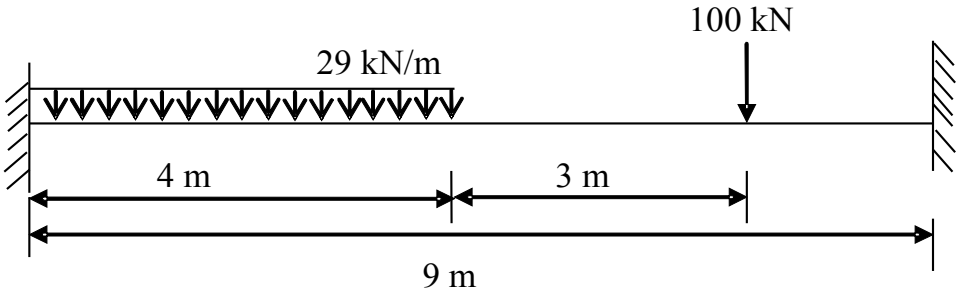


Fig.3 Fig.4

8. A continuous beam ABC covers two consecutive spans AB and BC of lengths 4 m and 6 m, carrying uniformly distributed loads of 6 kN/m and 10 kN/m respectively. If the ends A and C are simply supported, find the support moments at A, B and C. Draw SF and BM diagrams also.

CODE No.:10BT40102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

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 separation? What is the effect of pressure gradient on boundary layer separation? What are the different methods of preventing the separation of boundary layer?
b) A man weighing 90kg descends to the ground from an aeroplane with the help of a parachute against the resistance of air. The velocity with which the parachute, which is hemispherical in shape, comes down is 20m/s. Find the diameter of the parachute. Assume Co-efficient of Drag as 0.5 and density of air as 1.25kg/m^3.

2. a) Define the following terms
(i) Hydraulic radius (ii) Wetted perimeter (iii) Slope of the bed (iv) Exponential channel
b) An open channel of most economical section having the form of half hexagon with horizontal bottom is required to give a maximum discharge of 20.2m^3/s of water. The slope of the channel bottom is 1 in 2500. Taking Chezy's constant, C=60 in Chezy's equation, determine the dimensions of the cross section.

3. a) Stating the assumptions made, derive an expression for the variation in depth of flow along the bed of the channel for a GVF in an open channel.
b) The depth of flow of water at a certain section of rectangular channel of 2 m wide, carrying a discharge of 1.5 cumec, 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 as series of flat plated mounted on the periphery of a wheel never exceeds 50%.
b) A jet of water having a velocity of 55m/sec is deflected by a vane moving at 5m/sec in a direction at 35^0 to the direction of jet. The water leaves the vane normally to the motion of the vane. Draw the inlet and outlet velocity triangles and find out the vane angles for no shock at entry and exit. Take the relative velocity at the exit as 0.85 times the relative velocity at the entrance.

5. a) Explain the working a Francis turbine with a neat sketch.
b) A 150 mm diameter jet of water strikes the bucket of a Pelton wheel and is deflected through an angle of 165^0 by the buckets. The 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 the terms specific speed of a turbine, unit speed, unit power and unit rate of flow of a turbine. Also derive the expressions for the same.
b) 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 1×10^5 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) What are the different types of hydropower plants? Explain each one briefly.
b) Explain the terms load factor, plant factor and utilization factor.

CODE No.:10BT40103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

REINFORCED CEMENT CONCRETE STRUCTURES - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the behavior of under reinforced and over reinforced beam sections.
b) A reinforced concrete beam of section 300 mm × 450 mm is reinforced with 4 bars of 12 mm diameter. Determine the moment of resistance of the section. Use M 20 grade concrete and Fe 415 steel reinforcement. Adopt working stress method of design.

2. a) Explain the concept of limit state method of design.
b) Distinguish between factor of safety and partial safety factor.
c) Derive the expression for limiting depth of neutral axis of a rectangular section.

3. a) Find the design constants in Limit state method for M20 grade concrete and Fe 250 grade steel.
b) Calculate the moment of resistance of a R.C. beam of rectangular section 250 mm wide and 500 mm deep, if it is reinforced with 6 numbers of 20 mm bars on tension side and 2 numbers of 20 mm bars on compression side. Assume M 20 grade concrete and Fe 415 grade steel. Effective cover provided is 40 mm on both sides.

4. a) Explain the factors influencing the bond strength.
b) Design the reinforcement of a beam section 230 mm × 400 mm (effective depth) subjected to an ultimate twisting moment of 25 kNm and ultimate shear force of 50 kN. Use M 20 grade concrete and Fe 415 steel.

5. a) Derive the expression, from first principles, for 'Ultimate Load Carrying Capacity' of an axially loaded short-column with lateral ties.
b) Design longitudinal reinforcement and ties if an axially loaded column subjected to a working load of 850 kN. The unsupported length of the column is 3.0 m. Use M25 concrete and Fe 415 grade steel. Sketch the cross-section showing reinforcement details.

6. Design an isolated rectangular footing for a reinforced concrete column 300 mm × 550 mm reinforced with 6 reinforcing bars of 25 mm diameter, subjected to a factored axial load of 1100 kN and a factored uniaxial moment (about major axis), of 125 kNm at the column base. The safe bearing capacity of the soil is 220 kN/m^2 at a depth of 1.5 m. Assume M25 concrete and Fe415 grade steel. Sketch the reinforcement details.

7. a) Briefly explain the design of two way slab as per IS code provisions.
b) Design a two way slab 4m x 6m continuous on all the edges and supported on 300 mm wide beams to serve as an office floor. Adopt M 20 grade concrete and Fe 415 grade steel.

8. a) Explain the short-term and the long-term deflections.
b) A simply supported rectangular beam of 7.8 m span is of breadth 300 mm and effective depth 710 mm. The beam is reinforced with 6-25 Ø as tension reinforcement and 2-16 Ø as compression reinforcement. Check the beam for deflection. Use M 20 concrete and Fe 415 steel.

CODE No.:10BT40104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

CONSTRUCTION, PLANNING AND PROJECT MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail the design of shallow foundations.
b) Explain the combined footing and spread footing in detail with figures.

2. a) Explain any 3 types of sloped roofs with sketches.
b) Enumerate the general requirements of a good stair case.

3. a) Explain the methods of Termite - proofing.
b) Explain the various methods of pointing.

4. a) Explain the development of personnel department and authority Policy.
b) Explain the workmen's compensation act of 1923 and the subset-quent amendments.

5. a) Explain the functions of Material management departments.
b) Explain the factors affecting the cost owning and operating the equipment.

6. a) Explain the role of decision in Project management and what are the techniques for analyzing alternatives.
b) Explain the short comings of bar charts and remedial measures.

7. a) Explain the steps in Network development.
b) A project consists of 10 activities as detailed below.

Activity	P	Q	R	S	T	U	V	W	X	Y
Identification	(1,2)	(2,3)	(2,4)	(3,6)	(3,5)	(4,5)	(4,7)	(5,8)	(6,8)	(7,8)

Draw the Step by Step development of the Network diagram and give numbers to the events.

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

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

CODE No.:10BT40201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

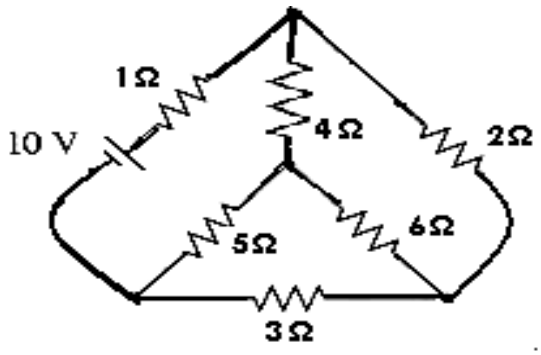
NETWORK ANALYSIS AND SYNTHESIS

[Electrical and Electronics Engineering]

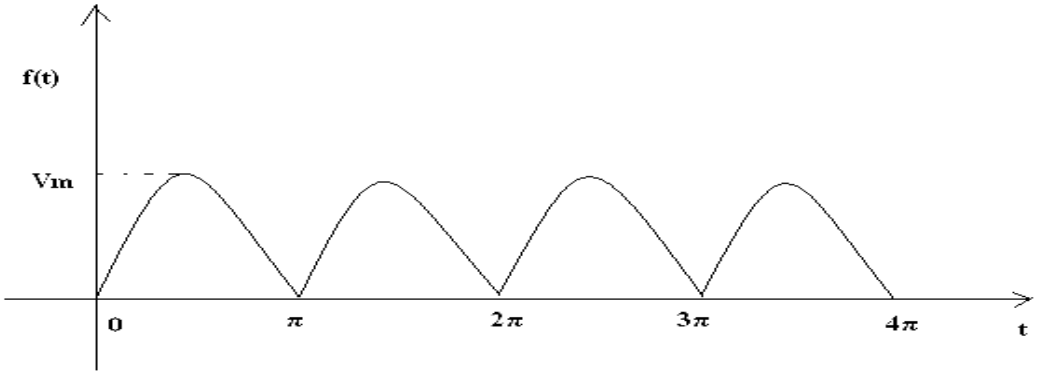
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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

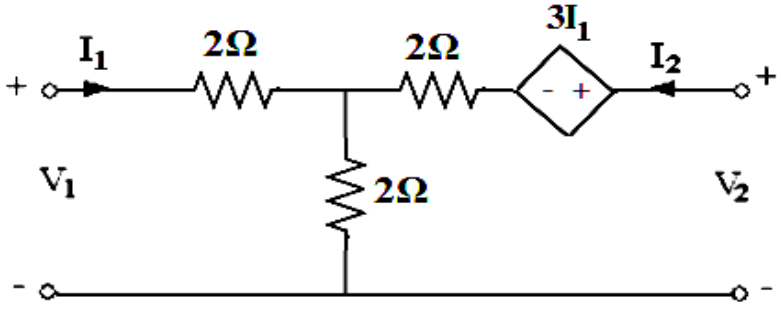


2. a) Give brief note on even function symmetry of wave form.
b) Determine the Fourier series for the full wave rectified wave form shown in figure below.

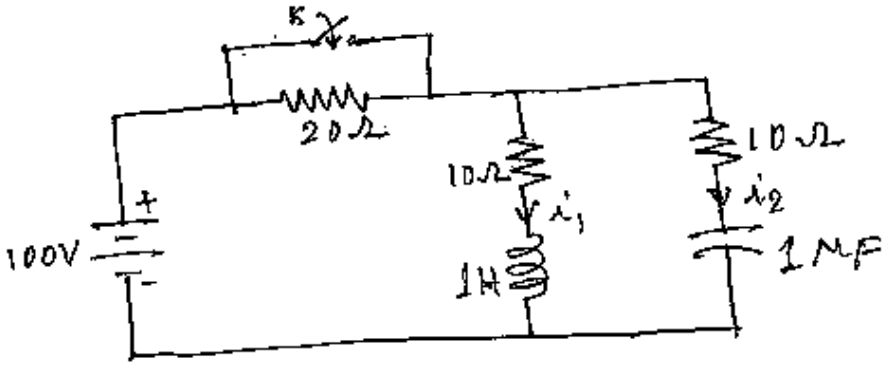


3. a) What are the advantages of Laplace Transforms?
b) Find the Inverse Laplace transform of **$I(S)=100 / (S^2+30S+200) (S+5)$.**

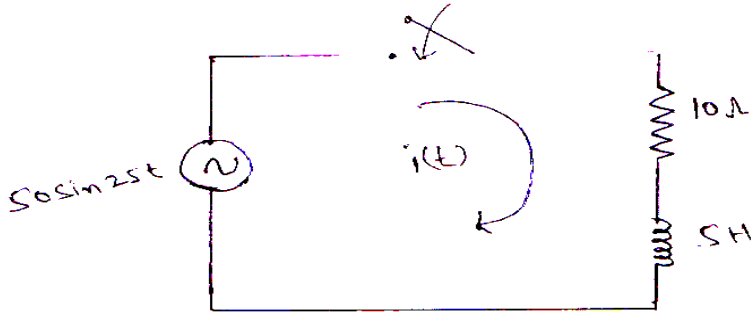
4. a) Express Z-parameters in terms of ABCD-parameters for a two-port network.
b) Obtain Z- parameters for the network shown below.



5. In the network shown below figure, steady state is reached with switch 'k' open. At time t=0, the switch 'k' is closed. Solve for $\mathbf{i_1}$, $\mathbf{i_2}$, $\frac{di_1}{dt}$ **and** $\frac{di_2}{dt}$ **at** $\mathbf{t=0^+}$.



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. Explain the necessary conditions for driving point function and transfer function.

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

CODE No.:10BT40202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ELECTRO MAGNETIC FIELDS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define electric field intensity. Explain how electric field intensity is determined at a point due to several charges.
b) Four point charges 30μC each are located at the four corners of a square, the diagonal of which measures 8m. Find the force on a 150μC charge located at 3M above the centre of the square.

2. a) Derive the expression for energy density in electrostatic fields.
b) Find the work done in moving a point charge 6 μC from (5, π, 0) to (7, π, 0) in the electric field $\bar{E} = \frac{10}{\rho}\bar{a}_{\rho} + 10_{z}\bar{a}_{z}$.

3. a) A total charge of 40 nC is uniformly distributed around a circular ring of radius 2m with its centre located at the origin (0,0,0) and lying in xy plane. Find the potential at point (0,0,5)m. Also calculate the potential at that point if all the charge is at the origin in the form of a point charge.
b) Derive the Boundary Relations for static electric fields across a common boundary separated by two perfect dielectric media.

4. A single phase circuit comprises of two parallel conductors A and B, 1cm radius and 1m apart. The conductors carry +10A and -10A respectively. Determine the magnetic field intensity at the surface of each conductor and also in the space exactly mid way between A and B. Establish the relations used.

5. a) Explain about Magnetic dipole and Dipole moment.
b) Derive the expression for torque on a current loop placed in a magnetic field.

6. a) Derive the Amperes circuital law in differential form.
b) State and explain Stokes theorem.

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. a) State and explain Poynting theorem.
b) Derive the expression for displacement current.

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CODE No.:10BT40203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

GENERATION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Give the overview of conventional energy sources.
b) Briefly narrate the energy forecast in Indian scenario.

2. Draw the schematic arrangement of hydro electric power station and explain its principle of operation.

3. a) Explain the function of super heater in a thermal power plant.
b) Why economiser is needed in a thermal power plant?

4. a) Discuss various factors which affect the selection of site for a nuclear power plant.
b) What are the various control rods used in a nuclear reactor? Describe the function of each of them.

5. a) Explain the classification of distribution systems.
b) A 800 meters 2 wire DC distributor AB fed from both ends is uniformly loaded at the rate of 1.25 A/meter run. Calculate the voltage at the feeding points A and B if the minimum potential of 220V occurs at point C at a distance of 450m from the end A. Resistance of each conductor 0.05 Ω/km.

6. a) Compare indoor and outdoor substations with respect to safety.
b) Explain various switching schemes available.

7. a) Explain about the desirable characteristics of a tariff.
b) A 500 KVA distribution transformer costs Rs.50,000 and has a useful life of 25 years. If the salvage value is Rs.5,000/- and annual compound interest rate is 8%, determine the value of transformer at the end of 10 years using sinking fund method.

8. Explain various methods available for improving power factor of a power system.

CODE No.:10BT40204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ELECTRICAL MEASUREMENTS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the different effects used in producing deflecting torque in an analog instrument. Cite examples which these effects are used.
b) A ballistic galvanometer gives a first swing of 60° for a discharge of 1000 μC. Find the quantity of electricity to produce
i) a swing of 90° in the instrument
ii) a spot deflection of 20 mm on a scale 1 m away.

2. a) Explain the Characteristics of Potential Transformer.
b) The primary winding of a 1000/5A.50Hz current transformer has a single turn. Its secondary burden consists of a non inductive impedance of 1.4 Ω. If the iron loss in the core is 1.4 W at full load and magnetizing mmf is 80AT, Calculate:
i) Flux in the core ii) ratio error at full load
Neglect leakage reactance

3. a) Describe the method for measurement of reactive power in single phase circuits.
b) Prove that the true power = $\frac{\cos\varphi}{\cos\varphi \ \cos(\varphi - \beta)}$ X actual wattmeter reading for electrodynamometer type of wattmeters where Cosφ is power factor of the circuit, $\beta = \tan^{-1} \omega L/R$ where L and R are inductance and resistance of the pressure coil.

4. a) Explain the construction and working of maximum demand indicator.
b) Explain the two element three phase induction type energy meter.

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 the measurement of resistance using Wheatstone bridge.
b) Explain about Loss of charge method for the measurement of High resistance.

7. a) Derive the balancing condition for finding self-inductance of a coil using Maxwell's bridge.
b) Deduce the condition for balance in AC bridges.

8. a) Explain the construction and working of a Weston type frequency meter.
b) Write short notes on RVDT.

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CODE No.:10BT40205

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

TRANSFORMERS AND INDUCTION MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

2. a) Develop the exact equivalent circuit of a single phase transformer and describe the necessary tests to determine the constants of the equivalent circuit.
b) A 100 kVA transformer with unity p.f. has a full-load loss of 3kW, the losses being equally divided between iron and copper. During a day, the transformer operates on full-load for 3 hours, half-load for 4 hours and negligible load for the remaining day. Calculate the All-day efficiency.

3. a) Explain the procedure to conduct short-circuit test on a single phase transformer.
b) Find the saving of copper in an auto transformer when compared to an ordinary transformer.

4. a) What are the various three-phase transformer connections? Explain the Open-delta connection in detail.
b) An ideal 3-phase step down transformer connected in delta/star delivers power to a balanced 3-phase load of 100 kVA at 0.8 p.f. The input line voltage is 22kV and the phase to phase turns ratio is 15. Determine the line voltages, line currents, phase voltages and phase currents on both primary and secondary side.

5. a) Explain how the rotating magnetic field is produced with 3-phase supply.
b) A 3-phase induction motor is wound for 4-poles and is supplied from 50Hz system. Calculate the synchronous speed, the rotor speed when slip is 4% and rotor frequency when motor runs at 600 rpm.

6. a) Explain the phenomenon of cogging and crawling in a 3-phase induction motor.
b) A 12-pole, 3-phase, 600V, 50Hz star connected, induction motor has rotor resistance and stand-still reactance of 0.03 and 0.5 ohms per phase respectively. Calculate the speed corresponding to maximum torque, ratio of full-load torque to maximum torque, if the full-load speed is 495 rpm.

7. Draw the circle diagram for a 3.73 kW, 200V, 50Hz, 4-pole, 3-phase star connected induction motor from the following test data:
No-Load test: Line voltage 200V, Line current 5A, total input 350W
Blocked Rotor test: Line voltage 100V, Line current 26A, total input 1700W
Estimate from the diagram for full-load condition, the line current, power factor and also the maximum torque in terms of the full-load torque. The rotor Cu loss at standstill is half the total Cu loss.

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

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CODE No.:10BT40221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

PRINCIPLES OF ELECTRICAL ENGINEERING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define and obtain open circuit admittance parameters by taking any one example.
b) A two port network has the following parameters z_{11}=20 Ω, z_{12}=5 Ω, z_{21}=20 Ω, z_{22}=15 Ω. Calculate short circuit parameters.

2. a) Explain in detail about classification of pass band and stop band.
b) Design a band elimination filter having a design impedance of 600 Ω and cut of frequencies of f_1=2 kHz and f_2=6 kHz.

3. a) Explain the symmetrical π-attenuator with necessary equations.
b) Explain the symmetrical bridged T-attenuator by deriving necessary equations.

4. a) Explain why a dc series motor should never run unloaded.
b) A 200V, 14.92kW, dc shunt motor when tested by Swinburne's method gave the following test results. Running light: Armature current of 6.5 A and field current = 2.2A with armature locked: I_a=70A when potential difference of 3V was applied to the brusher. Estimate efficiency of motor when working under full load.

5. a) Explicate the advantages of a poly phase systems over a single phase systems.
b) Two wattmeters are used to measure power in a 3-phase three wire load. Determine the total power, power factor and reactive power, if the two wattmeters read
i) 1000W each, both being positive values.
ii) 1000W each one being positive value and the other negative value.

6. A 1-phase transformer has 500 primary and 1200 secondary turns. The net cross sectional area of the core is 75cm^2. If the primary winding be connected to 400V, 50Hz supply, calculate the peak value of flux density in the core and voltage induced in the secondary 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. a) Explain the principle and operation of shaded pole motor.
b) Draw the characteristics of stepper motor.

CODE No.:10BT40301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

KINEMATICS OF MACHINERY

[Mechanical Engineering]

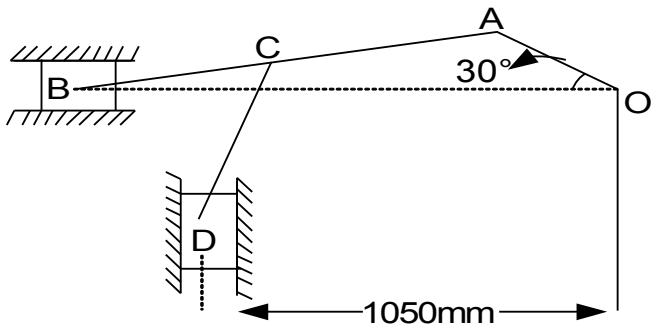
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Define Kinematic pair. Explain about various constrained motions.
b) Sketch slider crank chain and its various inversions, stating actual machines in which these are used in practice.

2. a) Sketch a Paucellier mechanism. Show that it can be used to trace a straight line.
b) What is a Scott-Russel Mechanism? What is its limitation? How is it modified?

3. a) What is centroid and axode? State and explain Kenedy's theorem.
b) In the mechanism as shown in the figure, the crank OA rotates at 20rpm anticlockwise and gives motion to the sliding blocks B & D. The dimensions of the various links are OA=300mm, AB=1200mm, BC=450mm & CD=450mm.
For the given configuration, determine.
i) The velocities of sliding at B & D
ii) Angular velocity of CD
iii) Linear acceleration of D
iv) Angular acceleration of CD



4. a) What is double hook joint? Explain.
b) Draw a neat sketch of Universal coupling and explain.

5. The following data relate to a cam profile in which the roller follower moves with uniform acceleration and retardation motion during ascent and descent.

Minimum radius of cam	=	25mm
Roller radius	=	8mm
Lift	=	32mm
Offset of follower axis	=	12mm towards right
Angle of ascent	=	60^0
Angle of descent	=	90^0
Angle dwell between ascent and descent	=	45^0
Speed of cam	=	200rpm

6. a) Derive an expression for length of path of contact.

b) Two gear wheels mesh externally to give a velocity ratio of 3:1.The teeth are of involute form; module=6mm. addendum = one module, Pressure angle = 20^0. The pinion rotates at 90 rpm.

Find i) Number of teeth on each wheel to avoid interference

ii) The length of path of contact.

7. a) Obtain an expression for the length of a chain.

b) Explain the phenomena of 'slip' and 'creep' in a belt drive.

8. a) What is an epicyclic gear train? In what manner does it differ from a simple or compound gear train?

b) A compound gear train consists of six gears. The number of teeth on each gear is as follows:

Gear	A	B	C	D	E	F
No. of teeth	60	40	50	25	30	24

Determine i) speed of the output shaft ii) output torque iii) Holding torque.

CODE No.:10BT40302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

THERMAL ENGINEERING - I

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write about Fuel injection systems for Diesel engines with the help of line diagrams.
b) An engine working on the Otto cycle is supplied with air at 0.1 Mpa, 35^0C. The compression ratio is 8. Heat supplied is 2100 kJ/kg. Calculate the maximum pressure and Temperature of the cycle, the cycle efficiency and the mean effective pressure. For air. $C_p = 1.005$, $C_v = 0.718$, and $R = 0.287$ kJ/kg^{0}K.

2. a) Determine the various methods of determining of Frictional power.
b) Describe the various cooling methods used in IC Engines. Explain any one of them.

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

4. a) How C.I engine combustions are classified?
b) Describe giving suitable sketches, the methods of producing air movement in C.I engines. Discuss their relative advantages and disadvantages.

5. a) Define the following terms:
i) Indicated Power
ii) Volumetric efficiency
iii) Indicated mean effective pressure
iv) Brake thermal efficiency
v) Air standard efficiency
vi) Mechanical efficiency
vii) Volumetric efficiency
b) The compression curve on the indicator diagram for a gas engine follows the law $PV^{1.3}$=constant. At two points on the curve at ¼ stroke and ¾ stroke the pressures are 1.4 bar and 3.6 bar respectively. Determine the compression ratio of the engine. Calculate the thermal efficiency and gas consumption per IP hour, if the relative efficiency is 0.4 and the gas has a calorific value of 18800 kJ/m^3.

6. a) Explain the motoring test for determination of frictional power.
b) Explain the gravimetric fuel flow measurement to determine the fuel consumption with a neat sketch.

7. a) Describe with a neat sketch the construction and working of a single stage and single-acting reciprocating air compressor.
b) A single-stage reciprocating compressor takes 1m^3 of air per minute at 1.013 bar and 15^0C and delivers it at 7 bar. Assuming that the law of compression is $PV^{1.35}$ = constant and the clearance is negligible, calculate the indicated power.

8. a) Differentiate between positive and non-positive displacement machines.
b) For a centrifugal stage compressor, derive expression for static head, dynamic head and relative head through energy and momentum equations.

CODE No.:10BT40303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

MANUFACTURING TECHNOLOGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are different types of patterns used in casting? Briefly explain their use with neat sketches.
b) Compare top gate and bottom gate with neat sketches.

2. a) Give the classification of centrifugal casting. Discuss the application of each class.
b) What are the various casting defects? Discuss the causes for these defects.

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) Explain laser beam welding technique.
b) Describe the differences between soldering and brazing.

5. a) Explain cold working process with its advantages and disadvantages.
b) Explain the principle of rolling with a neat diagram. Explain different types of roll-pass sequence.

6. a) Explain the principle of forging and write a brief note on drop forging.
b) Explain hydrostatic extrusion operation with a neat sketch. What are specific applications of the process?

7. a) How does the grain direction in sheet metal affect the design of bending dies?
b) Differentiate between embossing and coining.

8. a) With a neat sketch, discuss the working principle of ultrasonic machining process.
b) With a neat sketch, discuss the working principle of Electrochemical machining process.

CODE No.:10BT40401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

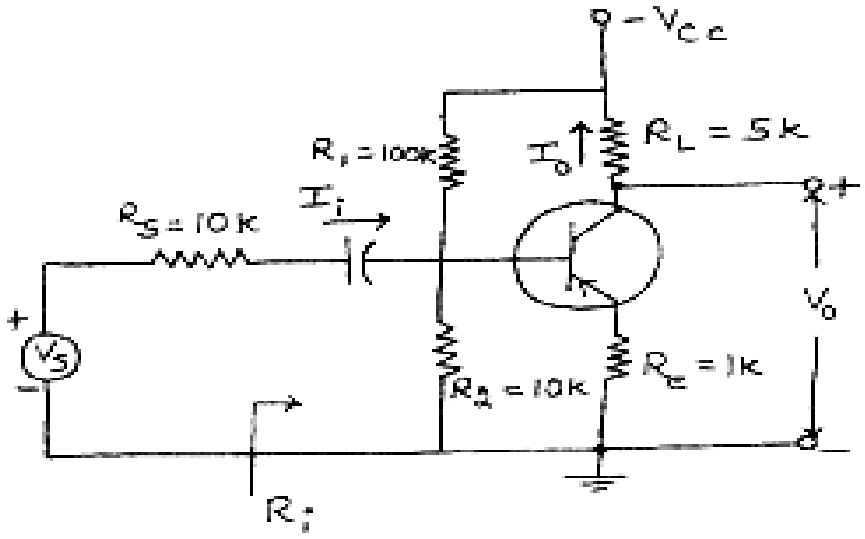
ELECTRONIC CIRCUIT ANALYSIS

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

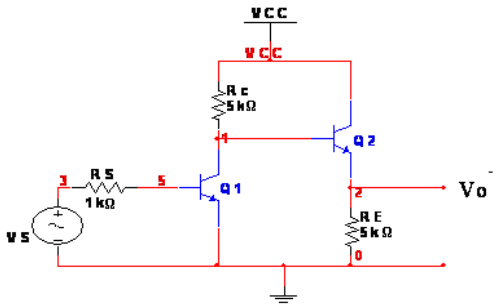
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. For the transistor amplifier shown below, Compute $A_I = I_o / I_i$, A_v, A_{vs} and R_i . Assume h_{ie} = 1100 ohms, h_{fe} = 50 , h_{re} = 2.5 X 10^{-4} , h_{oe} = 24 uA/V .



2. For a CE - CC 2 stage amplifier, the transistor parameters at the corresponding Q - point are h_{ie}=2KΩ, h_{fe} = 50, h_{oe} = 25μA/V and h_{re} = 6x10^{-4}. Find input and output impedances, individual and over all voltage and current gains with and without source.



3. a) Explain about CE Hybrid - Pi model.
b) Discuss the concept of Gain - Bandwidth product.

4. a) Explain the FET small signal Model.
b) Derive the voltage gain ,input admittance and output admittance of common source amplifier at High Frequencies.

5. a) Enumerate the effect of negative feedback on various characteristics of the amplifier.
b) An amplifier has an open loop gain of 90. When a negative feedback of feedback factor 0.6 is applied, calculate the overall gain.

6. a) Draw the equivalent circuit of a Quartz Crystal.
b) An Hartley oscillator is designed with L_1= 20 μH; L_2= 2 mH . Determine range of capacitances if frequency is varied between 950 K Hz and 2050 k Hz.
c) Derive the sustained frequency of oscillations for wein bridge 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) Discuss the advantages and disadvantages of Tuned amplifiers.
b) What is the effect of cascading single tuned amplifiers on bandwidth?
c) What is stagger Tuning?

CODE No.:10BT40402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

PULSE AND DIGITAL CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) 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) Discuss the effect of diode characteristics on the clamping voltage.
b) Draw and explain the operation of transistor clipping circuit.

3. a) Define the following terms:
i) storage time; ii) delay time; iii) rise time; iv) fall time.
b) Explain the behavior of a BJT as a switch. Give Applications.

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 = 500Ω;
Assume for transistor **V_{CE}(sat) ≈ -0.1V, V_{BE}(sat) ≈ -0.3V**. Find the minimum value of **h_{FE}** which will keep the ON transistor in saturation.

5. Define the terms slope error, displacement error, and transmission error. How are they related for an exponential sweep circuit? Derive the relation between them.

6. a) Draw the circuit diagram of bidirectional diode sampling gate and explain its working. Derive the expressions for gain A, control voltage V_C and control voltage V_n.
b) Write the disadvantages of bidirectional two diode sampling gate.

7. a) With the help of a circuit diagram and waveforms, explain frequency division by an Astable multivibrator.
b) Why synchronization is required in digital systems? What are the different types of synchronization? Give some examples.

8. a) With the help of circuit diagram explain the purpose of clamping diode in a positive diode AND gate.
b) Explain the effect of a diode capacitance on the output pulse of diode AND gate.

CODE No.:10BT40403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ELECTRO MAGNETIC WAVES AND TRANSMISSION LINES

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive Static Electric field in terms of potential gradient.
b) Obtain the expression for stored energy density in Electrostatic field.

2. a) State the Laplace and Poisson's equations.
b) Given the potential field $V = (50\sin\theta/r^2)$ volts in free space, determine at which point the V satisfies the Laplace equation.

3. a) State and explain Amphere's circuital law.
b) Define the magnetic vector potential and show that $\nabla x\overline{A} = \overline{B}$.

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. Prove the following in a Uniform plane wave
i) Electric field and magnetic field are perpendicular to each other.
ii) Fields are transverse to the direction of propagation.

6. a) State and prove Poynting theorem and interpret each term of the expression.
b) Define depth of penetration and derive an expression for a good conductor.

7. a) What is meant by distortion in transmission lines? Obtain the condition to be satisfied to have distortion less transmission.
b) A high frequency transmission line consists of a pair of wires having distributed capacitance of 0.01 μF/Km and a distributed inductance of 3 mH/Km. Find characteristic impedance and propagation constant at f = 10 MHz.

8. Explain the technique of the single stub matching and discuss the operation of the quarter wave transformer.

CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

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 is the exact number of bytes in a system that contains 1 Mbytes?
b) Convert the given number with the indicated base to decimal $(198)_{12}$.
c) Express the given number in decimal $(26.24)_8$.
d) Given X = 1010100 and Y = 1000011. Perform the subtraction X-Y and Y-X.
e) What bit must be complemented to change an ASCII letter from capital to lower case and vice versa?

2. a) What are basic theorems of Boolean algebra?
b) Realize AND and OR gates using universal gates.
c) Simplify the following Boolean functions to minimum number of literals.
i) **X(X'+Y)** ii) **(X'+Y)(X+Y)**
d) Find the complement of the function: $\mathbf{F_1 = X'YZ' + X'Y'Z}$

3. Simplify the following Boolean function for minimal POS form using K-Map and implement using NOR gates **F(W,X,Y,Z)=P(4,5,6,7,8,12)d(1,2,3,9,11,14).**

4. a) Design Binary to gray code converter and realize using logic gates.
b) Design 2*4 decoder using NAND gates.

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

6. a) Draw the logic diagram of a 4 - bit binary ripple counter using positive edge triggering.
b) Draw the block diagram of a 4 - bit serial adder and explain its operation.

7. A sequential circuit has one input and one output and its state table shown below. Design the Sequential circuit with
a) T -flip-flop b) RS flip-flop and c) JK flip-flop

Present State		Next state		Output	
		X=0	x=1	X=0	x=1
A	B	AB	AB	Y	Y
0	0	00	10	0	1
0	1	11	00	0	0
1	0	10	01	1	0
1	1	00	10	1	0

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) Supplementary Examinations January - 2014

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the h-Parameter equivalent circuit of CC and CE configuration and what are the typical values of h- Parameters for a transistor in CE and CB configuration.
b) Draw the circuit diagram of CE amplifier with emitter resistance and obtain its equivalent hybrid model and derive expressions for A_i, A_v , R_i, with approximate analysis. What is the role of CC and CE?

2. a) 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 $h_{fe} = 100$, $h_{ie} = 0.6k\Omega$, $A_I = 10$, $C_e = 3pf$. Find the following parameters: f_β, f_τ, r_b, e and r_{bb}.

3. a) How many types of feedbacks in amplifiers. Explain.
b) Prove that upper cutoff frequency with feedback is (1+ Aβ) times upper cut-off frequency without feedback.

4. a) In a transistorized Hartely oscillator the two inductances are 2 mH & 20 μH while the frequency is to be changed from 950 kHz to 2050 kHz. Calculate the range over which the capacitor is to be varied.
b) Derive an expression for frequency of oscillation of transistorized Colpitts oscillator.

5. a) Draw the diagram of class-B NPN push pull amplifier using transformer coupled input and explain it.
b) For a Class B amplifier providing a 22V peak signal to an 8Ω load and a power supply of V_{cc} determine.
(i) I/P Power (ii) O/P Power (iii) Circuit Efficiency

6. a) Design a high pass circuit for three different time constants, low, high and medium. Assume a 4 kHz square wave with $4V_{p-p}$ is applied to the circuit. Draw the output waveforms for the time constants mentioned above.
b) Draw the transfer characteristics of double ended clipping circuit and explain its operation with suitable circuit diagram.

7. Mention the four standard methods that help to restrain the transistor from entering the saturation? Explain each one in detail.

8. a) Explain the operation of a collector coupled transistor monostable multi vibrator with the help of neat circuit diagram and wave forms.
b) What is triggering? What are various ways in which a bistable multi vibrator can be triggered? Explain.

CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

COMPUTER ARCHITECTURE AND ORGANIZATION

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the Von-Neuman Architecture.
b) Explain the Fixed point and Floating Point data representation in detail.

2. Explain any five addressing modes of CPU with examples.

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

4. a) How do we process vectors in pipelining concept? Explain Matrix Multiplication.
b) Explain Flynn's Classification.

5. a) Explain in detail about the RAID.
b) Explain Daisy-chaining priority Interrupt.

6. a) What is a PCI bus? Explain.
b) Explain USB serial communication protocol.

7. List and explain the Interconnection Structures to connect the Memory and Processors.

8. Explain the operation of Pentium-IV with neat diagram.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

OBJECT ORIENTED PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Create a class complex to represent complex number and overload addition and multiplication operators for complex number addition and multiplication.
b) Define a class string with appropriate constructors, destructor and overloaded +, =, and = = operators use them in a main driver program.

2. a) What is a class? How does it accomplish data hiding? How do classes help us to organize our programs?
b) Compare and contrast overloading and overriding methods.

3. a) What are the advantages of JAVA? Explain about garbage collection.
b) What are the different types of control structures in JAVA?

4. a) Write a Java program to illustrate the usage of super to call superclass constructors.
b) Define an interface? Write a program which illustrates the way to design and implement an interface.

5. a) Differentiate exception and error. Explain the keywords used in exception handling in JAVA.
b) What is the need of packages in JAVA? Explain how to create and access packages.

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

8. a) What are the limitations of AWT? How did they overcome in Swing?
b) Write a Java Program to display the month names by JList and display the days by JComboBox.

CODE No.:10BT40503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

PRINCIPLES OF PROGRAMMING LANGUAGES

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What do you mean by Pure Interpretation? Explain with a diagram.
b) Analyze dangling else problem and explain how it causes ambiguity.
c) Explain static and dynamic semantics.

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 the special cases in handling of Looping constructs.
b) Explain control flow in C language.

4. a) Explain the scope and lifetime of variables, use examples to demonstrate when they would coincide and when they don't.
b) In what way co-routines differ from conventional sub programs?

5. a) What are templates in **C**++ ? Explain with an example.
b) Discuss about virtual function in **C**++.

6. a) Explain how exceptions bind to handlers in Java.
b) Discuss the applications of logic programming.

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

8. a) Name and explain the two most common built-in sequence of Python scripting language.
b) What do you mean by dict function? Explain with an example.
c) Explain string methods in Python scripting language.

CODE No.:10BT41001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

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) Briefly explain about the construction, working principle and applications of Multimeter.
b) With a neat sketch and the necessary equations, explain about the Gall-Tinsley potentiometer.

3. a) Derive the torque equation of a Single Phase Electrodynamometer type Wattmeter. How is it that a uniform scale is obtained when the scale span is about -45° to 45° of the position where there is zero mutual inductance between fixed and moving coils?
b) Describe the constructional details of a Single Phase Induction Energy Meter. Explain why the phase of shunt flux is made exactly in quadrature with that of applied voltage so as to produce a deflecting torque exactly proportional to power.

4. a) Explain the principle of working of Kelvin's Double Bridge and explain how the effect of contact resistance and resistance of leads is eliminated.
b) In the wheatstone bridge, the values of resistances of various arms are P=1000Ω, Q=100Ω, R=2010Ω and S=200Ω. The battery has an emf of 5V and negligible internal resistance. The galvanometer has a current sensitivity of 10mm/μA and an internal resistance of 150Ω. Calculate the deflection of galvanometer and sensitivity of the bridge in terms of deflection per unit change in resistance.

5. a) Explain True RMS Reading Voltmeter with a neat diagram.
b) Draw the block diagram of Staircase Ramp DVM and explain its operation.

6. Explain the principle of operation of a wave analyzer. Under what circumstances are harmonic distortion analyzers, spectrum analyzers and wave analyzers used?

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) Briefly discuss about X-Y Recorders.
b) With a neat sketch, explain in detail about spectrum analyzers.

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CODE No.:10BT41002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

TRANSDUCERS IN INSTRUMENTATION

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the various transducers and write their advantages.
b) Determine the confidence interval that has 50% probability of including the true value of a quantity when the average from $\boldsymbol{n}$ measurements is $\hat{\mathbf{y}}_n$ and the variance is $\boldsymbol{\sigma}^2$.

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 different types of strain gauges with neat diagrams.
b) Describe the construction and working of Resistance Temperature Detector.

4. a) Explain the working principle of resolvers with relevant diagrams.
b) Write the short notes on electro-magnetic transducers.

5. a) Explain about Capacitive Strain gauge.
b) Explain how capacitive transducer can be used for measurement of humidity?

6. a) What is Seeback effect? Explain the laws of Thermocouple.
b) Explain the construction, working and applications of Pyroelectric transducers.

7. a) Explain the working principle of Wheat-stone bridge in balance mode.
b) Discuss the working of the charge amplifiers.

8. a) Write short notes on magneto diodes & magneto transistors.
b) Explain in detail about Nanosensors.

CODE No.:10BT41201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

DATA COMMUNICATIONS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Compare between serial and parallel data transmission.
b) Define modulation, bit rate, signal to noise ratio and Baud.
c) Determine the band width required for M-ary FSK system.
Draw the geometrical representation of M-ary FSK signals and find out distance between the signals.

2. a) Describe balanced and unbalanced transmission lines.
b) Compare the advantages and disadvantages of optical fibers compared to metallic cables.
c) For a glass (n= 1.5) / quartz(n=1.38) interface and an angle of incidence of 35 degrees, determine the angle of refraction, critical angle, acceptance angle and numerical aperture.

3. a) Explain the process of digital commanding.
b) Briefly describe AT&T FDM hierarchy.

4. a) Draw the block diagram of a satellite communication subsystem and explain the function of each block.
b) What are the various methods of digital modulation techniques and which one is mostly used in digital satellite communication? Explain with reasons.

5. a) Explain the difference between a TLP and a DLP.
b) Describe the various types of Cross talk.

6. a) What is the need of cellular paging system? Explain the basic components of a paging system in detail.
b) Differentiate between roaming and handoff in cellular telephony.

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 basic blocks of a voice -band modem.
b) Explain the concept of AT command set.

CODE No.:10BT41221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

COMPUTER GRAPHICS AND MULTI-MEDIA SYSTEMS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the construction of cathode ray tube monitor.
b) Write about overview of graphics systems.
c) Describe any two hard copy devices.

2. Explain the basic concept of midpoint ellipse algorithm. Derive the decision parameter for the algorithm and write down the algorithm steps.

3. a) What is meant by composite transformation and when it is used?
b) Show the composition of two rotations is additive by concatenating the matrix representations for $\mathbf{R(\theta_1)\ R(\theta_2)=R(\theta_1+\theta_2)}$.

4. a) Explain window-to-viewport coordinate transformation.
b) Explain polygon clipping algorithm with a suitable example.

5. a) Derive the matrices for rotations about three principle axes in 3-D graphics.
b) List the blending functions suitable for cubic beizer curves. Discuss their properties.

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

7. Discuss at length about RAID technology for mass storage for multimedia systems.

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 January - 2014

CONTROL SYSTEMS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is block diagram? Explain the basic components of block diagram.

b) Write the differential equations governing the mechanical system shown in Fig.(a).

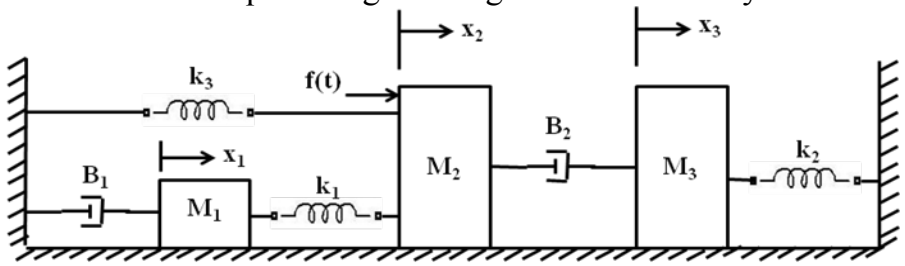


Fig. (a)

2. a) Find the transfer function of the network shown in Fig. (b).

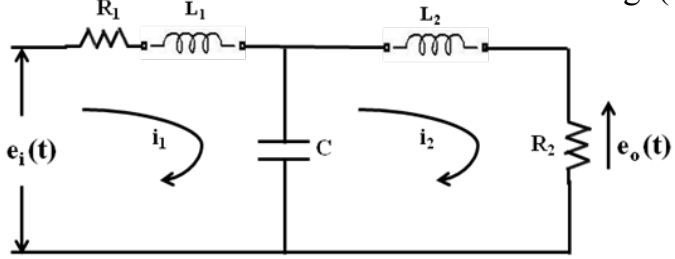


Fig.(b)

b) Draw the signal flow graph and find C/R of the system shown in Fig. (c)

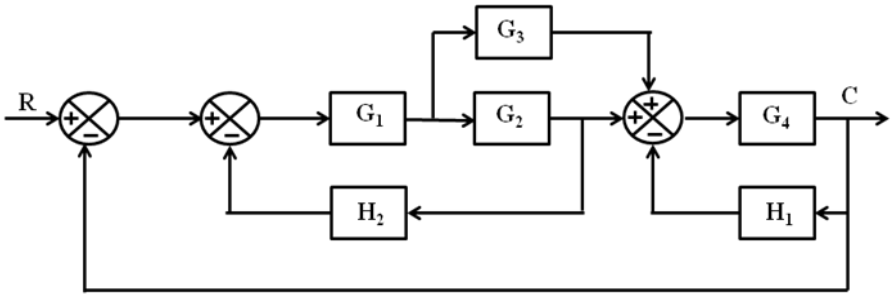


Fig.(c)

3. a) Discuss the unit step response of second order system.

b) For a system with, $GH(S) = \frac{5}{S+5}$, calculate the generalized error coefficients and the steady state error. Assume $r(t) = 6 + 5t$.

4. a) Explain special cases in Root locus.

b) Draw root locus if $G(s).H(s)$ is $\frac{K}{s(s+2)(s+4)}$; $0 < K < \infty$.

5. Sketch the asymptotic Bode plot and assess its stability if $G(s).H(s) = \frac{20}{s(1+0.1s)}$.

6. a) What is the significance of Nyquist plots?

b) Sketch polar plot for the open loop system given as $\frac{s+4}{(s+1)(s-1)}$.

7. a) Draw the Bode plot of a typical lag-lead compensator.

b) The open loop transfer function of a system is given by $G(S) = \frac{K}{S(S+1)(S+4)}$

Design a suitable lag compensator to meet the following specifications.
Phase margin = 43°
Bandwidth = 1.02 rad/sec
Velocity error constant, $\mathbf{K_v \geq 5\ sec^{-1}}$

8. a) Define the terms state vector and state portrait.
b) Derive an expression to obtain Transfer function from the state model.

CODE No.:10BT42302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

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. What are mechanism of image formation and discuss on localization of DNA molecule by using electron microscope**?**

3. Give a detailed account on principle and applications of Atomic absorption Spectroscopy.

4. Write short notes on:
a) Sedimentation
b) Applications of Density gradient centrifugation

5. Write short notes on
a) Thin layer chromatography
b) Two dimensional paper chromatography

6. Explain the methods of Nucleic acid sequencing.

7. Describe the similarities between optical rotatory dispersion and circular dichroism.

8. Explain types of analytical methods and write the importance of precision, accuracy, sensitivity and detection limits for instruments.

CODE No.:10BT42304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

BIOCHEMICAL THERMODYNAMICS

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish State and Path functions.
b) State and explain the first law of thermodynamics.

2. Define entropy. Discuss the mathematical statement of the second law of Thermodynamics.

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 200^0C are:

$$B = -0.388\ m^3/knoll, \quad C = -26 \times 10^{-3}\ m^6/kmol^2$$

Calculate V and Z for isoproponol vapour at 200^0C and 10 bar by
a) Ideal gas equation
b) Using the equation Z=PV/RT=1+BP/RT

5. a) Derive an expression for Gibbs -Duhem equation.
b) A mixture of chloroform & acetone with 66.6 mol % of chloroform forms an azeotrope at 64.5^0C and 1 atm. At this temperature, the vapour pressure of chloroform is 858 mm Hg. Find the activity coefficient of chloroform in the mixture.

6. Describe constant pressure and constant temperature vapor liquid equilibrium.

7. a) Consider a system in which the following reaction occur.

$$\mathbf{CH_4 + H_20 \rightarrow CO + 3\ H_2}$$

Assume there are present initially 2 mol $\mathbf{CH_4}$, 1 mol **CO** and 4 mol $\mathbf{H_2}$.
Determine expressions for the mole fractions $\mathbf{Y_i}$ as function of $\boldsymbol{\varepsilon}$.
b) Write the effect of temperature and pressure on equilibrium constant.

8. Explain the concept of degrees of reduction, taking the case of anaerobic cell growth, with no product formation.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Write down the DFS algorithm? Draw a Binary tree of depth 4; label the nodes with any suitable notations. Trace the nodes using DFS write down the sequences of nodes.

2. a) Write 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 and explain the control abstraction for Divide and conquer.
b) Suggest refinements to merge sort to make it in-place.

4. a) Write Greedy algorithm to the Job sequencing with deadline.
b) Explain how we can achieve Optimal storage on Tapes using greedy method.

5. Write notes on the following:
a) Optimal Binary Search Trees
b) String editing

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

7. Write in detail about FIFO branch and bound solution.

8. a) What is meant by Halting problem and explain with an example?
b) Explain the classes of P and NP.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

MICRO-PROCESSOR AND INTERFACING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss about the following addressing modes of 8086 with examples.
   i) Direct Addressing
   ii) Register Addressing
   iii) Immediate Addressing
   iv) Indexed Addressing
   b) Using 8086 ALP, write a program to add five 16- bit hexadecimal numbers.

2. a) Write an ALP to exchange two blocks of 8 bit numbers using MOVSB and STOSB instructions.
   b) Write an ALP in 8086 to add two 8 bit decimal numbers.

3. a) With an example explain how static RAMs are interfaced to 8086.
   b) Explain the need for DMA. Discuss in detail about DMA data transfer method.

4. a) Discuss about the three modes of operations of 8255 with relevant configuration diagrams.
   b) Briefly mention a few important features of 8255.

5. a) Briefly explain the structure of 8086 interrupt response and interrupt vector table with a neat diagram.
   b) Explain the importance of 8259 interrupt controller and explain how does it handle the interrupt.

6. a) Explain the operation of 8251 (USART). What are its various modes of operation?
   b) Explain high-speed serial communication standards.

7. a) Explain the salient features of Pentium processor.
   b) Distinguish between RISC and CISC processors.

8. a) Discuss briefly about serial data transmission modes of 8051.
   b) Write short notes on General-purpose registers of 8051.

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

OPERATING SYSTEMS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss operating system from user point of view and system point of view.
b) Distinguish between Batch Systems and Time-sharing Systems.

2. a) Define a thread. Explain various types of threads and their issues.
b) Write short notes on:
i) Starvation ii) Aging

3. a) What is a Race condition? Explain with an example.
b) What is a critical condition and what are the conditions to be satisfied by critical section problem? Describe Peterson's solution?

4. a) Process Allocation mark available.

	A B C	A B C	A B C
P_0	0 1 0	7 5 3	3 3 2
P_1	2 0 0	3 2 2	
P_2	3 0 2	9 0 2	
P_3	2 1 1	2 2 2	
P_4	0 0 2	4 3 3	

Answer the following questions using Bankers algorithm
i) What is the content of matrix need?
ii) Is the system in safe state?
iii) If a request from P_1 arrives for (1, 0, 2,) can the request be granted immediately.
b) Explain any two solutions for recovery from deadlock.

5. Discuss how LRU and FIFO page replacement algorithms can be implemented on the following reference string when the numbers of frames are 3. Also calculate the number of page faults. **3,2,1,0,2,2,1,7,6,7,0,1,2,0,3,0,4,1,5,4,5,6,7,6,7,2,4,2,7,3.**

6. a) What are the possible structures for directory? Discuss them in detail.
b) Explain about file attribute and operations.

7. Explain various types of mass storage structures.

8. a) Write about Access Matrix for providing protection.
b) Discuss about security problems and program threats.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

THEORY OF COMPUTATION

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Prove If M is an NFA, then there exists a DFA M' such that L(M) =L(M').
b) Construct a NFA for the following regular expression (a*/b*).a.b.b.

2. Explain the following in details.
a) Equivalence between NFA and DFA.
b) Mealy and Moore machine.

3. Give the definition for the following terms
a) NFA b) DFA c) Transition diagram
d) Regular Expression e) Restricted Turing machine f) NTM

4. Let G be the grammar S→aB | bA, A→ a | aS | bAA , B→b | bS | aBB for the string aaabbabbba Find
a) Left most derivation.
b) Right most derivation.
c) Parse Tree.

5. a) List and explain the closure properties of regular sets.
b) State and explain ARDEN's theorem with suitable example.
c) Find a CFG generating the given language in the following case. The set of even length string in **{a,b}*** with second symbol is **'a'**.

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

7. Design Turing Machine to increment the value of any binary number by one. The output should also be a binary number with value one more the number given.

8. a) What are the properties of LR(K) grammars show that the grammar.
i) S→0A2
A→1A1
A→1 is not LR(0)
ii) S→aAb
A→aAb/a is LR(1)
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)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

PROBABILITY AND STATISTICS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Two digits are selected at random from the digits '1' through '9'.
   i) If the sum is odd, what is the probability that 2 is one of the numbers selected?
   ii) If 2 is one of the digits selected, what is the probability that the sum is odd?

b) If $f(x) = \begin{cases} \frac{1}{2}(x+1) & ,-1<x<1 \\ 0 & ,elsewhere \end{cases}$ represents the density of a random variable X,

find the mean and standard deviation of X.

2. a) Six dice are thrown 729 times. How many times do you except at least three dice to show a 5 or 6?

b) In a test on 2000 electric bulbs, it was found that the life of a particular make, was normally distributed with an average life of 2040 hours and standard deviation of 60 hours. Find the number of bulbs likely to burn for
   (i) more than 2150 hours (ii) less than 1950 hours and
   (iii) more than 1920 hours and but less than 2160 hours.

3. a) Obtain the rank correlation coefficient for the following data:

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

b) Find the linear correlation coefficient between the variables x and y.

X	1.2	1.8	3.1	4.9	5.7	7.1	8.6	9.8
Y	4.5	5.9	7.0	7.8	7.2	6.8	4.6	2.7

4. a) Explain sampling distribution and standard error of the statistic.

b) A normal population has a mean of 0.1 and standard deviation of 2.1. Find the probability that mean of a sample of size 900 will be negative.

5. a) 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 $\mu = 22000$ miles against the alternative $\mu < 22000$ 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 $\alpha = 0.05$.
   Operator-A: n = 100, mean = 210, standard deviation = 11
   Operator-B: n = 150, mean = 220, standard deviation = 11.

6. a) From a random sample of 9 bulbs of brand A the mean life is found to be 600 hours with a standard deviation of 121 hours. From a brand B with a sample of 8 bulbs the corresponding values are 640 and 144. The test whether the difference in the mean life of bulbs is significant at 5% level. ($\mathbf{t_{0.025}} = 2.131$)

b) The results of an experiment with 3 materials A, B and C after subjected to high temperature has led to either having crumbles or being intact. The results are shown below (in suitable units).

	A	B	C
Crumbles	41	27	22
Intact	79	53	78

At 0.05 level of significance, test whether the result is the same for all the three materials. ($\chi^2 = 5.991$)

7. The current capacity in amperes of random samples of size 5 from each batch are recorded as shown for 10 such batches. Construct $\overline{X}$ and R chart and comment.

S.No.	$\mathbf{X_1}$	$\mathbf{X_2}$	$\mathbf{X_3}$	$\mathbf{X_4}$	$\mathbf{X_5}$
1	42	60	65	70	75
2	45	22	66	72	78
3	19	24	75	76	80
4	36	48	54	63	72
5	40	45	65	70	75

S.No.	$\mathbf{X_1}$	$\mathbf{X_2}$	$\mathbf{X_3}$	$\mathbf{X_4}$	$\mathbf{X_5}$
6	20	25	33	40	50
7	55	60	60	63	81
8	30	36	39	45	72
9	29	33	44	50	65
10	32	37	39	48	57

8. Cars arrive at a petrol bunk at the rate of 20 cars per hour on an average. The average time required for filling each car is 2 minutes per car. What is the traffic intensity? Determine the proportion of time the server is idle. On an average how long a car has to wait before taken to service?

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

ENVIRONMENTAL SCIENCES

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define and discuss the concept of Environment.
b) Supreme Court of India has aptly recognised the need for public awareness on environmental issues. Explain its outcome.

2. a) "Sustainability is possible with renewable resources" - Justify.
b) Discuss various adverse effects of modern agriculture.

3. a) Define and discuss the concept of an ecosystem.
b) What kind of succession can you expect on rocks? Describe its stages.

4. a) What is earth's budget and discuss?
b) Write note on the Hot Spots of biodiversity in India.

5. a) Discuss causes, consequences and control measures of noise pollution.
b) Explain how landslides are managed.

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

7. a) Explain the role of information technology in environment and human health.
b) Explain the "exponential growth".

8. a) Discuss various environmental problems encountered by you in field trips.
b) Spell out the objective of environmentalist's dairy.

CODE No.:10BT3BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations – January 2014

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Form the partial differential equation from $f(xy + z^2, x + y + z) = 0$.

b) Solve the heat equation $\frac{\partial u}{\partial t} = a^2 \frac{\partial^2 u}{\partial x^2}$, given that $u(0, t) = u(1, t) = 0$ and $u(x, t) = 0$ when $t \to \infty$.

2. a) Prove that $\int_0^1 x^2 \left(1 - \sqrt{x}\right)^5 dx = 2\beta(8,6)$.

b) Prove that $J_{-n}(x) = (-1)^n J_n(x)$, where n is a positive integer.

3. a) If f(z) = u + iv is analytic function then show that u(x,y) = c and v(x,y) = k form an orthogonal system, where c and k are constants.

b) Find an analytical function f(z) = u + iv, if $u + v = \frac{2.\sin 2x}{e^{2y} - e^{-2y} - 2.\cos 2x}$.

4. a) State and prove Cauchy's integral formula.

b) Evaluate $\int_C \frac{e^z}{(z^2 + \pi^2)^2}$ where C is circle $|z| = 4$.

5. a) Expand $f(z) = \frac{1}{(z-1)(z-2)}$ in the region (i) $|z| < 1$ (ii) $1 < |z| < 2$ (iii) $|z| > 2$

b) Find the sum of the residues of $f(z) = \frac{\sin z}{z \cos z}$ at its poles inside the circle $|z| = 2$.

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

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

7. a) Show that all the zeros at $z^7 - 5z^3 + 12 = 0$ lie between the circles $|z| = 1$ and $|z| = 2$.

b) Prove that one root of the equation $z^4 + z^3 + 1 = 0$ lies in the first quadrant.

8. a) Find the bilinear transformation, which maps the points **z = 1, i, -1** onto the points **w = i, 0, -i** and hence find the image of $|z| < 1$.

b) Discuss the translation and rotation by giving suitable illustrations.

CODE No.:10BT3BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

MATRICES AND NUMERICAL METHODS

[Civil Engineering, Mechanical Engineering, Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) If A is a Hermitian Matrix then prove that iA is a Hermitian matrix.

b) Solve the System of Equations by Gauss-Jordan Method
2x - 7y + 4z = 9, x + 9y - 6z = 1, - 3x + 8y + 5z = 6.

2. a) For the matrix $A=\begin{bmatrix} 1 & 2 & -3 \\ 0 & 3 & 2 \\ 0 & 0 & -2 \end{bmatrix}$, find the Eigen values of $3A^3+5A^2-6A+2I$.

b) State Cayley-Hamilton theorem and use it to find the inverse of the matrix $A=\begin{bmatrix} 1 & 2 & 3 \\ 2 & -1 & 4 \\ 3 & 1 & -1 \end{bmatrix}$.

3. a) Find a real root of the equation 3x=cosx+1 by Newton Raphson method.

b) Fit a parabola $Y = a + bx + cx^2$ to the following data.:

x:	-3	-2	-1	0	1	2	3
y:	1.1	1.3	1.6	2.0	2.7	3.4	4.1

4. a) Prove the following with the usual notations

i) $\Delta = \frac{1}{2}\delta^2 + \delta\sqrt{1+\frac{\delta^2}{4}} = 0$

ii) $\Delta^3 y_2 = \nabla^3 y_5$.

b) Apply Lagrange's formula to obtain u_{10} given that $u_5 = 12$, $u_6 = 13$, $u_9 = 14$ and $u_{11} = 16$.

5. a) A rod is rotating in a plane about one of its ends. If the following table gives the angle θ radians through which rod has turned for different values of time t seconds. Find the angular velocity and angular acceleration when t = 0.7 seconds.

t	0	0.2	0.4	0.6	0.8	1.0
θ	0	0.12	0.48	1.10	2.0	3.20

b) Evaluate $log_\theta 7$ using Simpson's 3/8th rule.

6.

a) Find the value of y for x=0.1 by Picard's method, given that $\frac{dy}{dx} = \frac{y - x}{y + x}, y(0) = 1$.

b) Find y(0.1) and y(0.2) using Runge kutta fourth order method, given that $\frac{dx}{dy} = x + y$ and $y(0) = 1$.

7. a) Derive the partial differential equation by eliminating **a** and **b** from the relation z= **a**x y + **b**.

b) A tightly stretched string of length 'L' has its ends fixed at x=0 and x=L. Motion is started by displacing the string in the form y= A sin (2πx/L) from which it is released from the rest at time t=0. Show that the displacement at ' x' at time 't' is given by y(x, t)= A sin(2πx/L) cos(2πct/L).

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) Regular/Supplementary Examinations January - 2014

MECHANICS OF SOLIDS

[Civil Engineering]

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

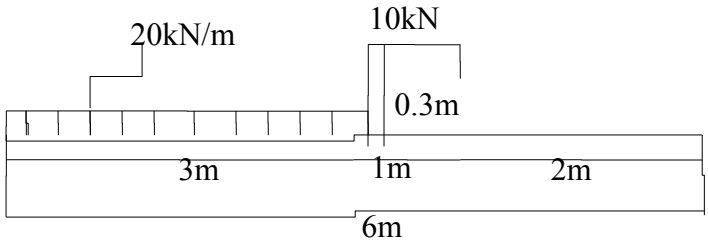
Answer any FIVE questions
All questions carry equal marks

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. a) How are the distributions of the loading, The shear force and bending moment related to each other. Are there any pre conditions for the relationship?

b) Draw the SFD and BMD for the following beam shown in Fig



3. A simply supported steel beam of span 5 m is subjected to a concentrated load of 500 kN at its mid-span. The beam has I-section with the top flange 200 mm × 15 mm, web 12 mm × 215 mm and bottom flange 150 mm × 20 mm. Draw the shear stress distribution across the depth of the section. Also determine the ratio of maximum shear stress to the mean shear stress.

4. A chimney has external and internal dimensions of 2.0 × 2.0m and 1.5 × 1.5m respectively and height 13m. Find the maximum and minimum stress intensity at the base when it is subjected to wind pressure of intensity 1750N/m^2 acting in direction of a diagonal. Density of masonry is 22.0KN/m^3.

5. What diameter of shaft will be required to transmit 80kW at 60rpm, if the maximum torque is 30% greater than the mean and the limit of torsional stress is to be 56 Mpa. If the modulus of rigidity is 84Gpa, what is the maximum angle of twist in 3m length?

6. Show that the shearing stress on inside of the coil of a close coiled helical spring is larger than that on the outside. Calculate the factor by which stress on the inside is higher. Calculate the total stress on the inside.

7. Find the change in the diameter, length and volume of a thin steel cylindrical shell of thickness 12 mm, 1.5 m diameter and 4.5 m long carrying a fluid at a pressure of 2.8 N/mm^2.

8. A steel compound cylinder is made by shrinking a cylinder of external diameter 350 mm and internal diameter 250 mm over another cylinder of external diameter 250 mm and internal diameter 150 mm. The radial pressure at the junction after shrinkage is 9 N/mm^2. Find the final stresses if the cylinder is subjected to on internal fluid pressure of 100 N/mm^2.

CODE No.:10BT30102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

BUILDING MATERIALS AND CONCRETE TECHNOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the classification of stones.
b) Describe the various qualities of good bricks.

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

3. a) Explain the necessity of seasoning of timber and describe the various methods of seasoning of timber.
b) Describe the various types of paints.

4. a) Describe the various processes adopted to manufacture of steel.
b) Describe the various treatments given to glass.

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

6. a) Explain the factors influencing the strength of concrete.
b) Describe the various non-destructive testing methods on concrete.

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

8. a) Explain the following:
(i) Cellular concrete
(ii) High density concrete
b) Describe the various types of Polymer concrete.

CODE No.:10BT30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

BASICS OF ELECTRICAL AND MECHANICAL TECHNOLOGY

[Civil Engineering]

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

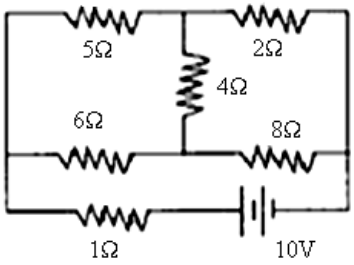
(Minimum of two questions from each part should be chosen for answering five questions)

All questions carry equal marks

PART - A

1. a) State and explain the Kirchhoffs laws with an example.

b) Using star delta transformation find the current and power supplied by the battery as shown in below figure.



2. a) What are the different types of DC motor according to the ways in which fields are excited? Show the connection diagram of each type

b) A separately exited generator when running at 1200 rpm supplies a current of 200 A at 125 V to a circuit of constant resistances .What will be the current when speed drops to 1000 rpm if the field current is unaltered? Armature resistance is 0.04 ohms and the total voltage drop at brushes is 2 V. Ignore the change in armature reaction.

3. a) What are the different losses that occur in transformer? Which losses vary with load? How?

b) Derive the condition for maximum efficiency of a transformer.

4. a) Explain the principle of operation of alternator.

b) Derive the emf equation of an alternator.

PART - B

5. a) Describe the working of Oxy Acetylene gas welding. Discuss the different flames employed and their suitability.

b) Compare Brazing, soldering and 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) What is air conditioning? Explain the comfort air-condition system.

b) Explain vapour compression system of refrigeration.

8. a) Sketch and explain the working of multi stage compressor.

b) Write short notes on power shovels.

CODE No.:10BT30104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

SURVEYING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A line was measured with a 30 m tape. This was standardized at 20ºC under a pull of 10 kg. The measured length was 1500 m. The temperature during measurement was 30ºC and the pull was 15 kg. Find the true length of the line if Coefficient of expansion = 3.5×10^{-6} per ºC. Modulus of elasticity = 2.1×10^{-6} kg/cm² and Cross-sectional area of the tape= 0.020cm².

2. a) How would you set up plane table at a station? Explain the various steps of setting.
b) Explain the tracing paper method of solving the Three Point problem. What is the practical utility of the solution to Three Point problem in the field?

3. What are "curvature and refraction" corrections in leveling? Derive an expression for the combined effect. Why are the effects ignored in ordinary leveling?

4. a) Explain briefly, how you determine the capacity of a reservoir.
b) At a station, a trench was measured and found to be 1 m wide and 1.25 m deep. At the next station, 10 m away from the first one, it was 1.1 m wide and 2.8 m deep. Determine the volume of earth work between two stations using the prismoidal formula.

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

6. a) Explain the methods of tacheometry.
b) A tacheometer is set up at an intermediate point on a traverse leg AB and the following observations were made on a vertically held staff. The instrument is fitted with an anallatic lens and the multiplying constant is 100. Compute the length AB and reduced level of B if RL of A is 500.0 m.

Staff station	Vertical angle	Staff readings
A	$5^0\ 42'$	1.756, 2.506, 3.256
B	$3^0\ 36'$	0.855, 1.255, 1.655

7. Explain the procedure to set out simple circular curve (i) by offsets from long chord and (ii) by successive bisection of arcs of chords.

8. a) Describe the basic principle of electronic distance measurement.
b) Explain the instrumental errors in EDM.

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CODE No.:10BT30105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January- 2014

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 and 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) Derive expressions for total pressure and centre of pressure for a vertically immersed surface.
b) A triangular gate which has a base of 1.5m and an altitude of 2m lies in a vertical plane. The vertex of the gate is 1m below the surface in a tank which contains oil of specific gravity 0.8. Find the force exerted by the oil on the gate and the position of the centre of pressure.

3. a) Define and distinguish between streamline, pathline and streakline. For what type of flow these lines are identical ?
b) A 40cm diameter pipe, conveying water, branches into two pipes of diameters 30cm and 20cm respectively. If the average velocity in the 40cm diameter pipe is 3m/s, find the discharge in this pipe. Also determine the velocity in 20cm pipe if the average velocity in 30cm diameter pipe is 2m/s.

4. a) State Bernoulli's theorem. Mention the assumptions made. How it is modified while applying in practice? List out its engineering applications.
b) A pipe 300m long has a slope of 1 in 100 and tapers from 1.0m diameter at the higher end to 0.5m at the lower end. Quantity of water flowing is 90 litres/s. If the pressure at the higher end is 70 KN/m^2, find the pressure at the lower end.

5. a) Explain the terms Hydraulic gradient and total energy lines.
b) Three pipes of diameters 300mm, 200mm and 400mm and lengths 300m, 170m and 210m respectively are connected in series. The difference in water surface levels in two tanks is 12m. Determine the rate of flow if co-efficients of friction are 0.005, 0.0052 and 0.0048 respectively, considering : i) Minor losses and ii) Neglecting minor losses.

6. a) A venturimeter has its axis vertical, the inlet and throat diameters being 150 mm and 75 mm respectively. The throat is 225 mm above inlet. The coefficient of discharge of venturimeter is 0.96. Petrol of specific gravity 0.78 flows up through the meter at a rate of 29 l/s. Find the pressure difference between the inlet and outlet.
b) Explain the working of a pitot tube with a neat sketch.

7. a) Oil of relative density 0.92 and dynamic viscosity 1.05 poise flows between two fixed parallel plates kept 1.2 cm apart. If the mean velocity is 1.4 m/s, calculate (i) the maximum velocity, (ii) velocity and shear stress at a distance of 0.2 cm from one of the plates and (iii) head loss in a distance of 25 m.
b) Oil of specific gravity 0.82 is pumped through a horizontal pipe 15 cm in diameter and 3 km long at a rate of 900 l/min. The pump has an efficiency of 68% and requires 10 hp to pump the oil. Verify that the flow is laminar and determine the viscosity of the oil.

8. Explain the following :
a) Similitude and its types
b) Different types of non-dimensional numbers and their use
c) Hydrodynamically smooth and rough pipes.

CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define the following fluid properties:
(i) mass density (ii) weight density and (iii) specific gravity. Give their units in SI system.
b) A simple manometer is used to measure the pressure of oil (specific gravity 0.8) flowing in a pipe line. Its right limb is open to the atmosphere and left limb is connected to the pipe. The centre of the pipe is 9 cm below the level of mercury (specific gravity 13.6) in the right limb. If the difference of mercury level in the two limbs is 15 cm, determine the absolute pressure of the oil in the pipe in N/cm^2.

2. a) Explain the terms: (i) Streamline (ii) Path line and (iii) Streak line.
b) Derive the continuity equation in Cartesian co-ordinates.

3. a) Explain the terms : (i) Total energy line and (ii) Hydraulic gradient line.
b) A horizontal venturimeter with inlet diameter 200 mm and throat diameter 100 mm is used to measure the rate of flow of water. The reading of the differential manometer connected to the inlet is 180mm of mercury. If the co-efficient of discharge is 0.98 determine the rate of flow.

4. A horizontal jet of water 210 mm^2 cross-section and flowing at a velocity of 15 m/s hits a flat plate at 60^o to the axis (of the jet) and to the horizontal. The jet is such that there is no side spread. If the plate is stationary, calculate a) the force exerted on the plate in the direction of the jet and b) the ratio between the quantity of fluid that is deflected upwards and that downwards. (Assume that there is no friction and therefore no shear force.)

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

7. a) What is a Surge tank? Describe with neat sketches different types of surge tanks.
b) A turbine develops 7460KW under a head of 24.7m at 135r.p.m. what is the specific speed? What would be its normal speed and output under a head of 19.5m?

8. The axis of a centrifugal pump is 3 m above the water level in the sump and the static lift from the pump centre is 35 m. The friction loss in the suction and delivery pipes are 1 m and 8 m respectively. The suction and delivery pipes are each 15 cm in diameter. The impeller is 30 cm in diameter and 1.5 cm wide at outlet and its speed is 1700 rpm. The water at inlet has radial flow and the blade angle at outlet is 30^o to the tangent to the periphery. Calculate the power to be supplied and discharge assuming a manometric efficiency of 77% and mechanical efficiency of 72%.

CODE No.:10BT30201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

ELECTRICAL CIRCUITS

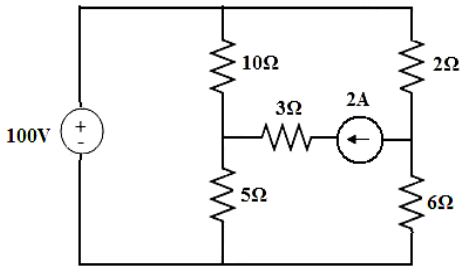
[Electrical and Electronics Engineering]

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

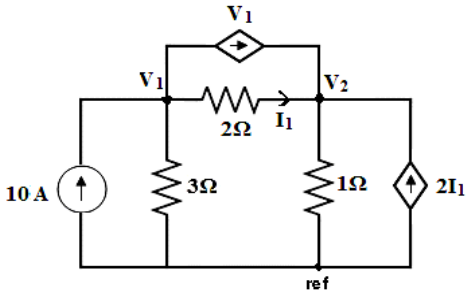
Answer any FIVE questions
All questions carry equal marks

1. a) Explain 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) In the circuit shown below, determine the current flowing through the 2Ω resistor using mesh analysis.



b) In the circuit shown below, determine the current flowing through the 2Ω resistor using nodal analysis.



3. a) Define frequency, peak value, instantaneous value and peak factor.
b) Obtain average value, RMS value, form factor and peak factor of a sinusoidal voltage $v(t)=V_m$ Sin ωt.

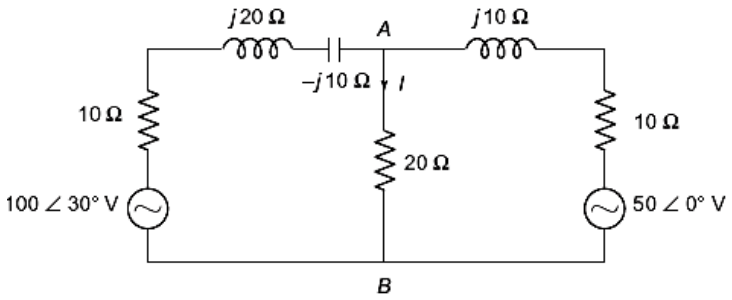
4. a) Derive the resonance frequency of series circuit interms of half power frequencies
b) A voltage of $200\angle 45^0$ volts is applied to the parallel combination of two branches. The currents in the branches are $20\angle 65^0$ A and $40\angle 30^0$ A. Find the following
i) Branch impedance and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

5. a) Explain the generation of three Phase voltages.
b) The power input to a 250 h.p, 1100 volts, 3- phase motor running at full load is measured by two watt meters which indicate 140kW and 60kW respectively. Calculate
i) the input ii) the p.f and iii) the line currents.

6. a) Explain the dot convention with circuit diagram

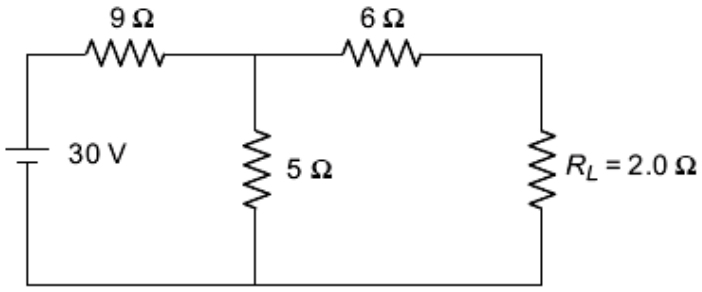
b) Two coils having 500 and 1000turns, respectively, are wound side by side on a closed iron circuit of area of cross-section 100 cm^2 and mean length 800 cm. Calculate the coefficients of self induction of the two coils and the mutual induction between the two. Neglect leakage. Take μ_r as 2000. If a current steadily grows from 0 to 1 A in 0.1 sec, in the first coil, find emf induced in the other coil.

7. Determine the current I in the branch AB of the circuit shown in below figure by using Norton's theorem



8. a) State and explain Mill man's theorem

b) Calculate the change in current of the network given below using compensation theorem when load resistor changes to 10 ohms



CODE No.:10BT30202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

DC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the principle of energy-conversion. From a consideration of the various energies involved, develop the model of an electromechanical energy-conversion device.
b) An Inductor is made up of 500 turns coil on a core of 12cm^2 cross sectional area and gap length 0.025 cm. The coil is connected directly to a 120V, 50Hz voltage source. Neglecting the coil resistance, coil reluctance and leakage inductance; calculate the time averaged acting on the core tending to close the air gap. How would this force vary if the air gap length was doubled.

2. a) Explain why equalizer connections are used in lap windings and dummy coils are used in wave windings.
b) A shunt generator has a full load current of 195A at 250V. The stray losses are 720W and the shunt field coil resistance is 50Ω. It has a full load efficiency of 90%. Find the armature resistance. Also find the current corresponding to maximum efficiency.

3. a) Define critical resistance and critical speed. Explain how critical resistance and critical speed of a DC generator can be determined.
b) A separately excited generator when running at 1000 rpm supplied 200A at 125V. What will be the load current when the speed drops to 800 rpm, If I_f is unchanged? Given that armature resistance is 0.04Ω and brush drop is 2V.

4. a) Explain the process of commutation in detail with respect to DC generator. Also obtain the expression for "Reactance voltage".
b) Explain the various methods of limiting armature reaction.

5. a) Explain the parallel operation of DC compound generators.
b) Describe the function of equalizing rings in DC generators.

6. a) Explain the principle of operation of a DC motor and also explain the significance of back emf.
b) A 4-pole, 250V series motor has a wave connected armature with 1254 conductors. The flux per pole is 22mwb when the motor is taking 50A. Iron and friction losses amount to 1.0kw. Armature resistance is 0.2Ω and series field resistance is 0.2Ω. Calculate
(i) the speed (ii) the shaft torque (iii) the efficiency

7. a) Explain why a starter is required for starting of DC motor. Also explain the working principle of 3-point starter with neat diagram.
b) A 250V series motor takes 40A when developing full load torque at 1500 rpm. Its total resistance is 0.5Ω. If the load torque varies as the square of the speed, determine the resistance to be connected in series with the armature to reduce the speed to 1200 rpm. Assume a straight line magnetization curve.

8. a) Explain the Hopkinson's test for determining efficiency of two similar DC shunt machines
b) Two series motors run at a speed of 600 and 700 rpm, respectively, when taking 25A at 250 V supply. The armature circuit resistance of each motor is 0.25Ω. Find the combined speed of the machines when they are connected in series taking a current of 25 A and mechanically coupled.

CODE No.:10BT30221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

BASIC ELECTRICAL ENGINEERING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define electric field, potential difference.
b) Three capacitors 15, 25 and 50 μF are connected in series across 300 V supply. Find,
(i) Total capacitance.
(ii) Voltage across each capacitance and
(iii) Total energy stored.

2. a) What is the difference between path and loop?
b) Explain Superposition Theorem and give its applications.

3. a) What is power factor and what is its impact on an electrical network?
b) A current leading its voltage by 90^0 is required from a 230 V, 50 Hz supply using a bank of capacitors. What should be the rating of the capacitor bank?

4. a) What are the advantages of star-connected 3-phase system?
b) Three similar coils in star take a total power of 1200 W and a power factor of 0.8 lagging from a 3-phase, 400V, 50 Hz supply. Calculate the resistance and inductance of each coil.

5. a) Explain the principle of operation of a d.c motor
b) Classify the types of generators based on excitation.

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

7. Explain the principle and operation of the following :
a) AC servo motor
b) Stepper motor.

8. a) How are measuring instruments classified?
b) Explain the principle of operation of PMMC meters.

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CODE No.:10BT30222

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

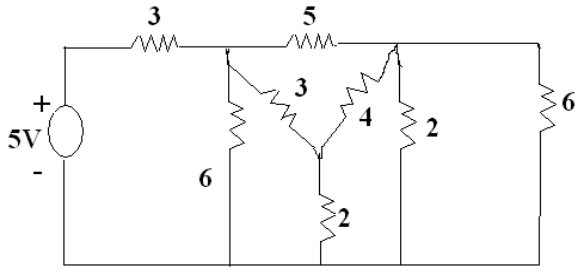
FOUNDATIONS OF ELECTRICAL ENGINEERING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State Ohms law. What are its limitations?
b) Determine the equivalent resistance from the given circuit. All values are in ohms



2. a) Explain the procedural steps for superposition theorem.
b) By using superposition theorem find the current through 1Ω resistor of the shown Fig.1.

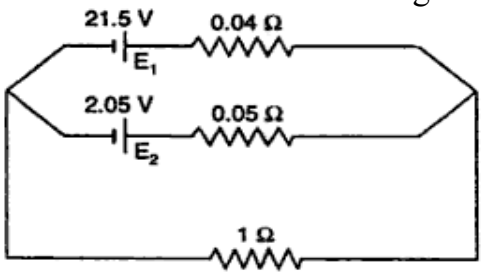


Fig.1.

3. Derive Form factor and peak factor from the fundamentals of the sin wave.

4. a) Explain how torque is produced in dc motor. Also derive torque equation of dc motor from fundamentals.
b) A dc shunt generator delivers 50 kW at 250 V when running at 400 rpm. The armature and filed resistances are 0.02 ohm and 50 ohms respectively. Calculate the speed of the machine when running as a shunt motor and taking 50 kW input from 250 V supply. Allow 1 volt brush drop.

5. a) Explain the principle of operation of transformer and write its role in power system.
b) The following reading were obtained from O.C. and S.C. test on 8 KVA, 4000/120 V, 50 HZ transformer

O.C. test (L.V. side); 120 V; 4 A; 75 Watts
S.C. test (H.V. side); 9.5 V; 20 A; 110 Watts

Calculate the efficiency of the transformer at Full load and Half Full load with 0.8 power factor.

6. a) Explain about different types of controlling torques in instruments.
b) Explain about repulsion type moving iron ammeter.

7. a) Distinguish between open loop and closed loop control system with respect to their performance.
b) What are different properties of linear and nonlinear systems?

8. a) Explain the concept of Transfer function.
b) Write the methods for finding transfer function from given mechanical system.

CODE No.:10BT30223

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

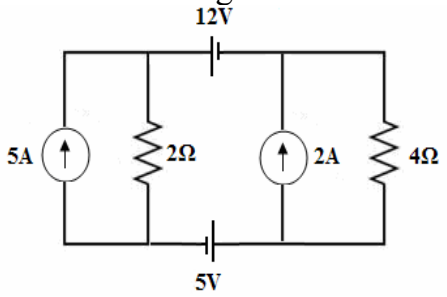
CIRCUIT THEORY

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

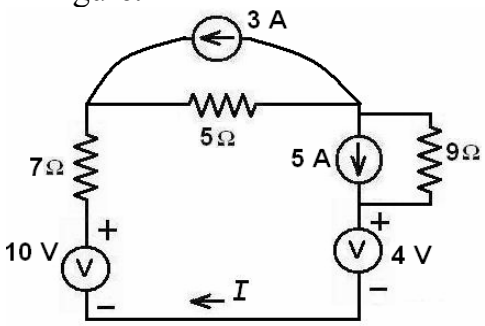
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

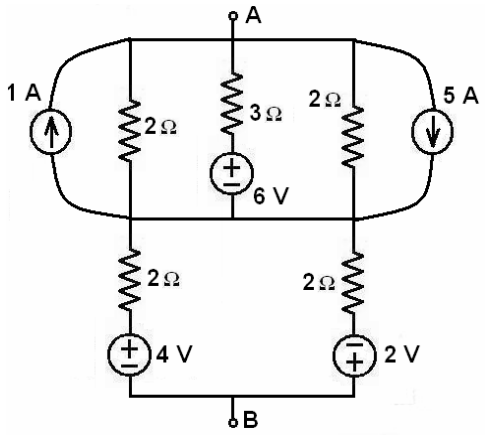
1. a) State and explain the Kirchhoff's laws.
b) Explain the terms: Active elements and Passive elements.
c) Find the current in the 4 ohms resistor using source transformation techniques.



2. a) Find the value of current I in figure.



b) Reduce the network of figure below into an equivalent network across terminals A and B with (i) one equivalent voltage source (ii) one equivalent current source.



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

4. a) Derive an expression for power in a series RL circuit excited by a sinusoidal voltage $v(t)=V_m$ Sin ωt.

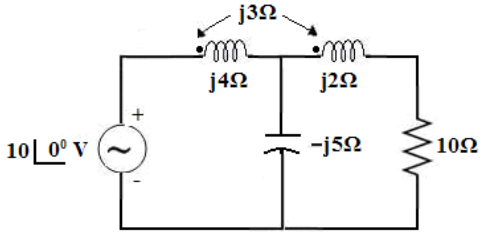
b) The current in a circuit is given by I=(3+j5)A when the applied voltage is V=(150+j150)V. Determine the complex expression for the impedance, power factor and the real power.

5. a) Derive the equation for the transient current i(t) in a series RC circuit excited by a sinusoidal voltage $v(t)=V_m$ Sin ωt, at time t=0. Assume zero initial charge across the capacitor.

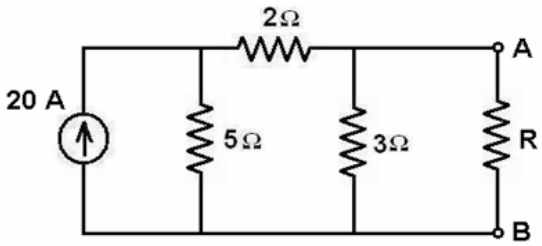
b) A series RLC circuit with R=10 ohms, L=0.1 henries and C=20 microfarads has a constant voltage of 100 Volts applied at time t=0. Determine the transient current i(t). Assume zero initial conditions.

6. a) Explain the concept of dot convention for coupled circuits.

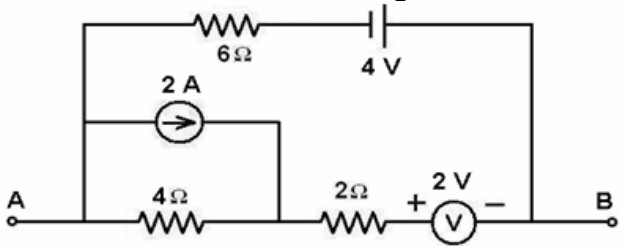
b) Find the voltage across the 10Ω resistor in the network shown below.



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

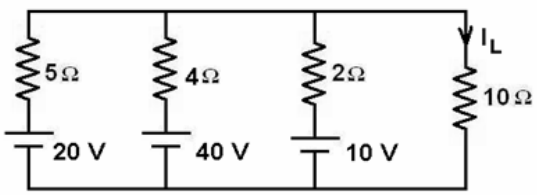


B) Using Superposition Theorem, find V_{AB} for the figure shown below.



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/Supplementary Examinations January - 2014

BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and explain the Ohm's Law, give their limitations.
b) List the methods to be used to solve parallel circuits and series - parallel circuits; and compare these two circuits' at least five aspects.
c) Determine the instantaneous value of an e.m.f. of 100V, after 0.001 second has elapsed the voltage starts from zero and the frequency is 50 Hz.

2. a) How are D.C generators classified and state the principle on which generators operate?
b) What is the working principle of a D.C. motor? Explain.
c) What is torque? What is the source of torque force in a D.C. motor?

3. a) Explain the different losses that occur in a single phase transformer.
b) A single phase transformer has 350 primary and 1050 secondary turns. The net cross sectional area of the core is 60cm^2. If the primary winding be connected to a 400V, 50Hz single phase supply, calculate the voltage induced in this secondary winding.

4. a) Explain how the regulation of an alternator is determined by the synchronous impedance method.
b) The effective resistance of a 2200V, 50Hz, 440KVA alternator is 0.5 ohm, and a field current of 40A gives the full load current of 200A on short circuit condition. Calculate the synchronous impedance and reactance.

5. a) What do you understand by depletion region at p-n junction? What is the effect of forward and reverse biasing of p-n junction on the depletion region? Explain with necessary diagrams.
b) Explain the concept of tunneling with energy band diagrams.

6. a) Discuss about necessary conditions for oscillators.
b) Explain how a transistor acts as an amplifier.

7. a) List the various applications of ultrasonics.
b) Explain the differences between induction heating and dielectric heating.

8. a) Explain how voltage, current and frequency are measured using CRO.
b) Derive an expression for the 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/Supplementary Examinations January - 2014

STRENGTH OF MATERIALS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Sketch and explain the stress-strain curve of brittle material.
b) A rod of steel is 20 m long at a temperature of 20^0 C. Find the free expansion of the length when the temperature is raised to 65^0 C. Find the temperature stress produced
i) When the expansion of the rod is prevented.
ii) When the rod is permitted to expand by 5.8 mm.
Take $\alpha = 12 \times 10^{-6} / {}^0C$ and $E = 2 \times 10^5$ N/mm^2.

2. a) Define the following:
i) Bending moment
ii) Shear force
iii) Point of contraflexure
b) A cantilever beam of length 2 m carries a uniformly distributed load of 3 kN/m over a length of 1.5 m from its fixed end and a point load 5 kN at its free end. Draw the shear force and bending moment diagrams.

3. A beam 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. A beam of I-section is having overall depth as 500 mm and overall width as 190 mm. The thickness of flanges is 25 mm whereas the thickness of the web is 15 mm. The moment of Inertia about neutral axis is given as 6.45×10^8 mm^4. If the section carries a shear force of 40 KN, calculate the maximum shear stress. Also sketch the shear stress distribution across the section.

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

6. A simply supported beam of circular cross-section is 5 m long and is of 150 mm diameter. What will be the maximum value of the central load if the deflection of the beam does not exceed 12.45 mm. Also calculate the slope at the supports. Take $E = 2 \times 10^8$kN/m^2.

7. a) Derive an expression for increase in volume of a thin walled spherical vessel of diameter 'd' and thickness 't' subjected to an internal fluid pressure 'p'.
b) To what depth would a copper float of 25 cm diameter and 0.3 cm thick have to be sunk in water in order that the diameter is decreased by 0.003 cm?
E_c = 1E06 kg/cm^2, ν=0.27, Weight of water = 1 gm/cm^3.

8. A thick cylinder closed at the ends has its outer diameter twice the inner diameter and is subjected to an internal pressure only. Another cylinder having the same dimensions is subjected to external pressure only. Determine the ratio of these pressures if
a) The maximum hoop stress is same for both cylinders
b) The maximum hoop strain is same for both cylinders.

CODE No.:10BT30302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

MATERIALS SCIENCE AND METALLURGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Why does the resistance to electric current increases with the raising temperature? Explain based on metallic bonding.
b) Define and explain grain and grain boundaries.

2. a) Name Hume-Rothery's rules and explain all of them.
b) Distinguish fully between interstitial solid solutions and interstitial compounds.

3. a) What is an invariant reaction? List and explain three reactions present in the Fe-Fe_3C equilibrium diagram.
b) Explain peritectoid reaction.

4. Explain any two surface hardening methods.

5. Explain the following heat treatment process
a) Age hardening treatment b) Cryogenic treatment for alloys

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

7. a) Describe the crystal structure of crystalline ceramics with neat sketch.
b) What is the purpose of addition of MgO and Al_2O_3 to soda lime glass?

8. Explain the following terms
a) Blending b) Sintering c) Compacting.

CODE No.:10BT30303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

THERMODYNAMICS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) How cyclic process is different from Reversible process? How Thermodynamic Cycle is different from Mechanical Cycle? Give examples for each.
b) Define Quasi- static process. Can we consider Quasi -static process as a Reversible process at all times? Give examples for each.

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 17^0C, 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) Define and prove Carnot's theorem.
b) A heat engine receives half of its heat supply at 1000 K and half at 500 K, while rejecting heat to a sink at 300 K. Calculate the maximum efficiency of the engine.

4. a) Why second law is called law of Degradation of energy? What is the available energy refereed to a cycle?
b) 2 Kg of water at 80^0C is adiabatically mixed with 3 kg of water at 30^0C at a constant atmosphere of 1 bar. Find the increase in the entropy of the water due to the mixing process.

5. a) Why do the isobars on Mollier chart diverge from one another? Explain the importance of critical point.
b) A sample of steam from a boiler drum at 3 Mpa is put through a throttling calorimeter in which the pressure and temperature are found to be as 0.1 Mpa and 120^0C. Find the quality of the sample taken from the boiler.

6. a) What is a polytropic process? What are the relations among ***p***, ***v*** and ***T*** of an ideal gas in a polytropic process?
b) One kg of a air in a closed system, initially at 5^0C and occupying 0.28 m^3 volume, undergoes a constant pressure heating process to 110^0C. There is no work other than ***p*** *dv* work. Find (i) the work done during the process (ii) the heat transferred and (iii) the entropy changes of the gas.

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

CODE No.:10BT30304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

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
   (a) Glass (b) Concrete (c) Worm (d) Diamond Knurling

2. Sketch the hole basis & shaft basis system and indicate symbol of fit for shrink fit

3. Sketch the following thread profiles for a pitch 3mm & nominal diameter 25mm
   (a) Whitworth (b) Acme

4. Sketch the following types of keys
   (a) Key with gib head (b) Wood ruff key

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

1. Sketch the top & front views of square nut with nominal diameter of the bolt D=25mm.

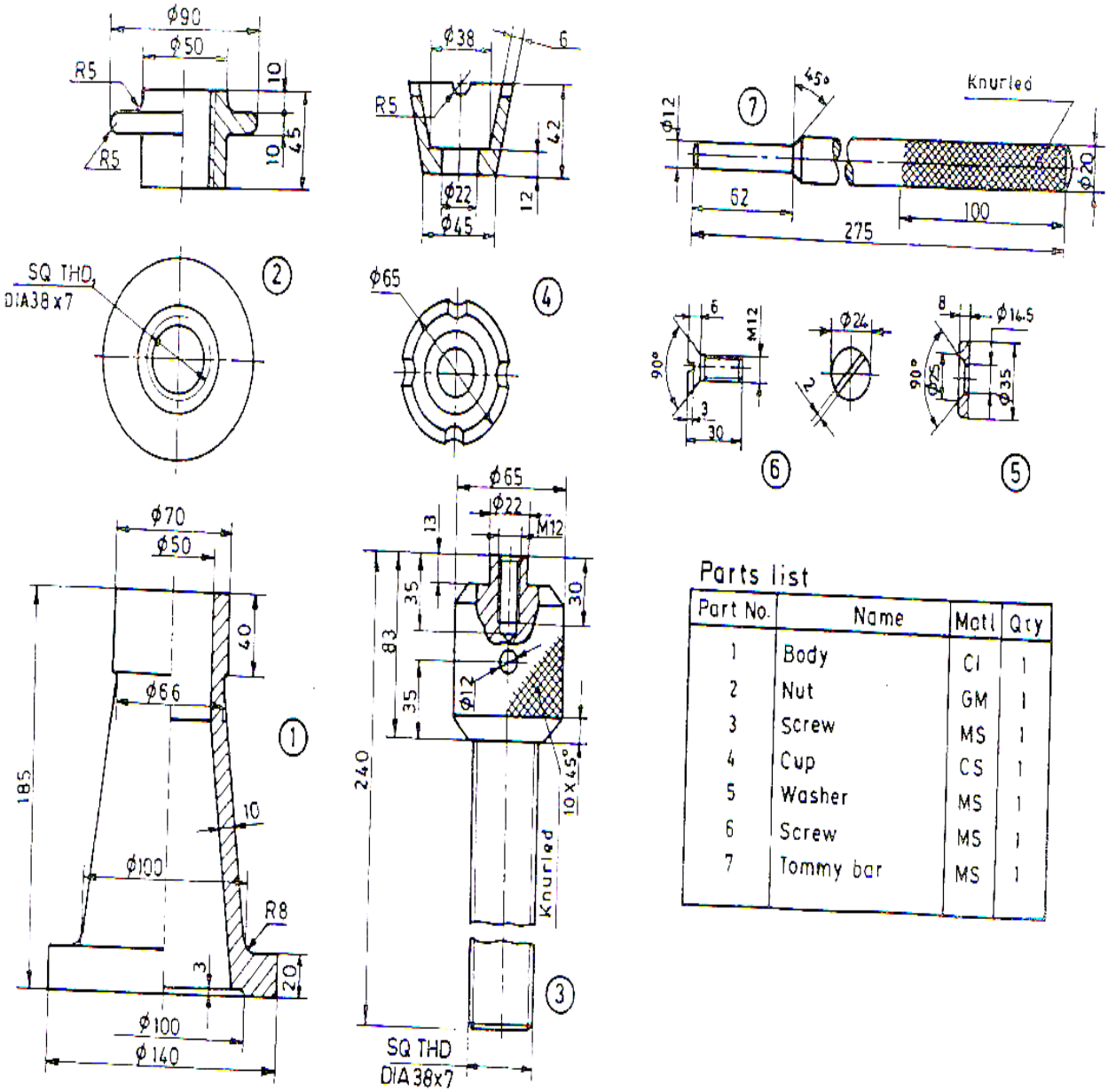
2. Sketch the sectional view from front & view from the side of a half lap muff coupling indicating the proportions for connecting two shafts each diameter 30mm.

3. Draw the sectional front view, the top view of single riveted single strap butt joint for 12mm thick plates show the pitch, margin & width of overlap.

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

1. The details of screw jack are shown in fig 1. Assemble the parts and draw the following views
   (i) half sectional view from the front (ii) view from above.

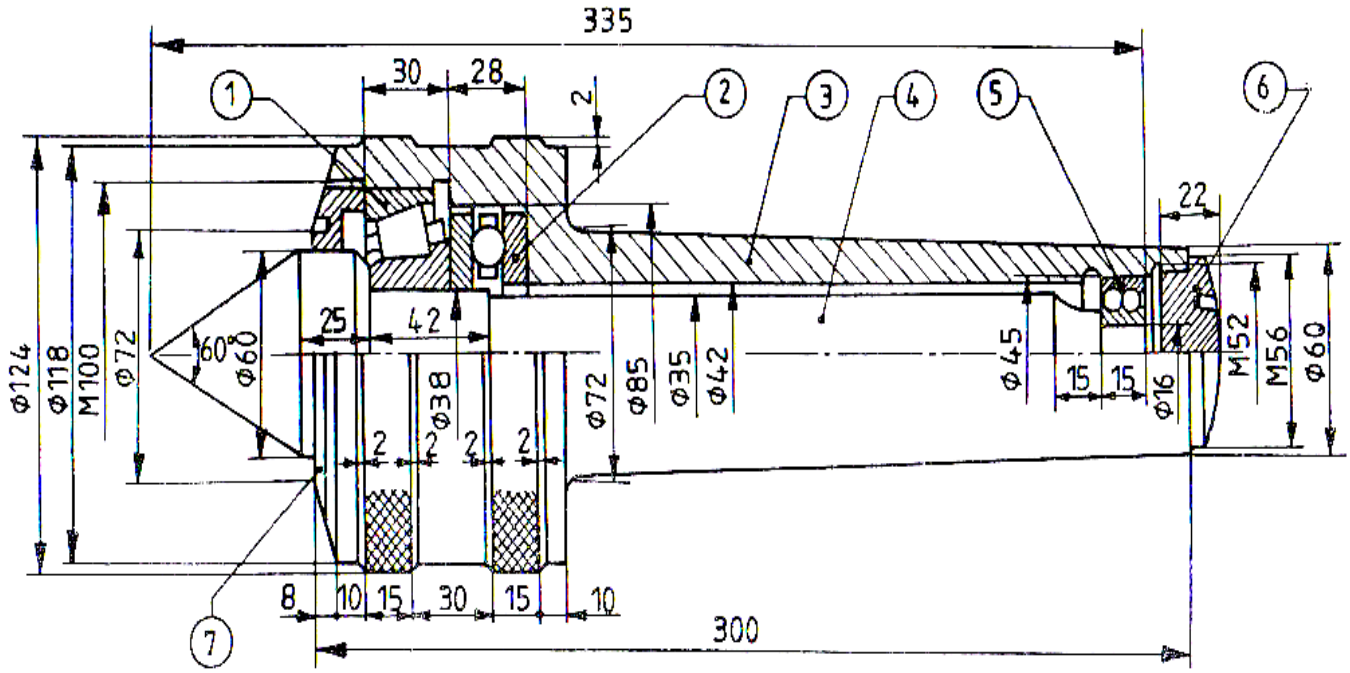
2. Prepare the part drawings of the Revolving Centre as shown in fig 2. Indicate the dimensions, fits and tolerances if any;



Parts list

Part No.	Name	Matl	Qty
1	Body	CI	1
2	Nut	GM	1
3	Screw	MS	1
4	Cup	CS	1
5	Washer	MS	1
6	Screw	MS	1
7	Tommy bar	MS	1

Fig -1 Screw Jack



Parts List

Part No.	Qty.	Name	Matl.	Part No.	Qty.	Name	Matl.
1	1	Taper roller bearing		5	1	Ball bearing	
2	1	Thrust bearing		6	1	Back cover	MS
3	1	Barrel	MS	7	1	Front cover	MS
4	1	Centre	HCS				

Fig -2 Revolving Centre

CODE No.:10BT30401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

SEMICONDUCTOR DEVICES AND CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

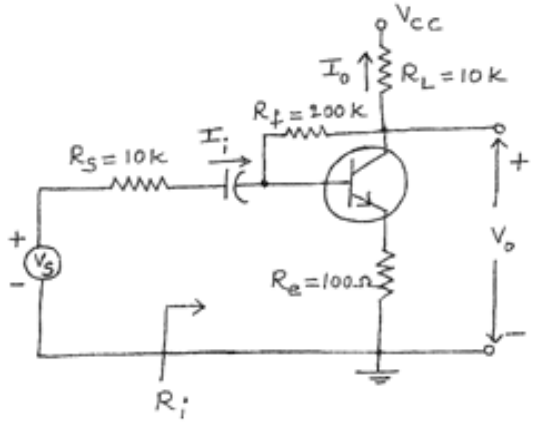
1. a) Explain the formation of *pn*- junction diode qualitatively.
b) A silicon diode at Room temperature conducts 5 mAmp at 0.7 Volts. If the voltage increases to 0.8 Volts. Find forward and reverse saturation currents.
c) Explain Avalanche Break down Mechanism.

2. a) Derive the expression for ripple factor for the circuit HWR with capacitor filter.
b) In a bridge rectifier, the transformer is connected to 220 Volts, 60 Hz mains and the turns ratio of the step down transformer is 11**:**1. Assuming the diodes to be ideal, find
(i) Voltage across the load (ii) D.C.Current (iii) PIV.

3. a) Explain Input and Output characteristics of transistor under CB configuration.
b) Explain briefly various methods of constructing a Transistor?

4. a) Draw a BJT fixed bias circuit and derive the expression for the stability factor 'S' .
b) An NPN transistor with β=50 is used in a CE circuit with Vcc =10V Rc=2K. The bias is obtained by connecting a 100K Ω resistance from collector to base Assume Vbe=0.l7V. Find (1) the quiescent point (2) the stability factor S.

5. For the transistor amplifier shown below, Compute $\mathbf{A_I = I_o / I_i}$, $\mathbf{A_v}$, $\mathbf{A_{vs}}$ and R_i .Assume h_{ie} = 1100 ohms, h_{fe} = 50 , h_{re} = 2.5 X 10^{-4} h_{oe} = 24 uA/V



6. a) Explain with neat diagram the characteristics of enhancement MOSFET.
b) Define μ, r_d and g_m and derive the relation between them.

7. Derive the expressions for voltage gain and Input admittance and output admittance of a source follower.

8. Explain about (1) Schottly barrier diode (2) Varactor diode and mention their applications.

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CODE No.:10BT30402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

PROBABILITY THEORY AND STOCHASTIC PROCESSES

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove Bayes 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 variable X has the following probability distribution .

x:	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
p(x):	**0**	**k**	**2k**	**2k**	**3k**	$\mathbf{k^2}$	$\mathbf{2k^2}$	$\mathbf{7k^2+k}$

Find (i) The value of **k**
(ii) **p(1.5 < X < 4.5 / X > 2)** and
(iii) The smallest value of X for which **p(X ≤ t)>1/2**

b) State the properties of the probability density function.

3. a) State and prove properties of characteristic function of a random variable X.
b) Let X be random variable defined by the density function
$\mathbf{f_X(x) = (5/4)(1-x^4)}$ **for 0 < x ≤ 1** and **0** elsewhere. Find **E[X], E[X²]** and variance.

4. a) A joint sample space for two random variables X and Y has four elements (1, 1), (2,2), (3,3) and (4,4). Probabilities of these elements are **0.1, 0.35, 0.05** and **0.5** respectively. Determine through logic and sketch the distribution function $\mathbf{F_{X,Y}}$ **(*x, y*).** Also find the probability of the event $\{X \le 2.5,\ Y \le 6\}$.

b) Three statistically independent random variables ***X1***, ***X2***, and ***X3*** are defined by

$\bar{X}1 = -1.2 \quad \sigma_{x1}^2 = 1.3$
$\bar{X}2 = 0.8 \quad \sigma_{x2}^2 = 1.8$
$\bar{X}3 = 1.0 \quad \sigma_{x3}^2 = 1.2$

Write the equation describing the Gaussian approximation for the density function of the sum ***X*= *X*1+*X*2+*X*3**.

5. a) Define and list the properties of the conditional density functions.
b) The joint probability density function of two random variables X and Y is by
f(X,Y)= a(2X+Y²) 0≤x≤2, 2≤y≤4, and **0** elsewhere. Find the value of **'a'** and **P(X≤1,Y>3).**

6. a) Explain about auto and cross correlation function properties.
b) Explain about Poisson random process.

7. Statistically independent zero mean random processes **X(t)** and **Y(t)** have auto correlations functions $\mathbf{R_{XY}(\tau) = \exp(^{-|\tau|})}$ **and** $\mathbf{R_{YY}(\tau) = \cos(2\pi\tau)}$ respectively.
(i) Find the auto correlation function of the sum $\mathbf{W_1}$ (t) = X(t) + Y(t).
(ii) Find the auto correlation function of difference $\mathbf{W_2(t)}$ = X(t) - Y(t).
(iii) Find the cross correlation function of $\mathbf{W_1(t)}$ and $\mathbf{W_2(t)}$.

8. a) A signal ***x(t)*** **= u(*t*) exp (- αt)** is applied to a network having an impulse response ***h*(*t*) = Wu (*t*) exp** $(-Wt)$. Here α and W are real positive constants and $u(\cdot)$ is the unit step function. Find the system's response.
b) Derive the relationship between power spectrum and autocorrelation.

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CODE No.:10BT30403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

SIGNALS AND SYSTEMS

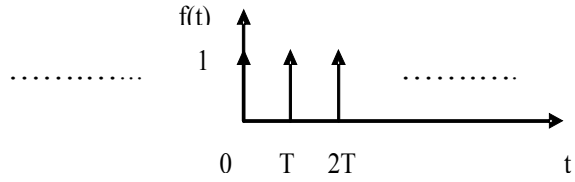
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define and sketch the basic discrete time signals .State the conditions for a given function to be periodic.
b) Determine whether the following function is periodic or not A sin2t + b cosπ t.

2. Obtain the exponential Fourier series for the periodic wave form shown below



3. a) Find the Fourier transform of the signal $g(t) = 4\,\mathrm{sinc}(2t)e^{-j4t}$.
b) Define Energy spectral density and power spectral densities. Derive the relation among the transfer function, input and output Spectral densities.

4. a) State and prove (i) convolution theorem (ii) time shifting property of Fourier transforms.
b) The impulse response of a linear system is $h(t) = (3/4)(e^{-t}-e^{-3t})u(t)$. Determine the output y(t) for the following inputs (i) $2\,\delta(t-5)$ (ii) $4\,u(t)$.

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

6. a) State and prove sampling theorem for low pass Signals.
b) Determine the Nyquist sampling rate and Nyquist sampling interval for the signals
(i) sinc(200πt) (ii) sinc(100πt)+sinc(50πt)

7. a) State and prove sampling theorem
b) The signal $g(t) = 20\,Cos(50\pi t)\,Cos(60\pi t)$ is sampled at the rate of 100 samples per second.
(i) Determine the spectrum of sampled signal
(ii) Specify cut-off frequency of the ideal reconstruction filter to recover g(t) from its samples
(iii) What is the Nyquist rate for g(t) ?

8. a) Obtain the relationship among the Fourier Transform, Laplace Transform and Z-Transform.

b) Find the Inverse Z-Transform of $X(Z) = \dfrac{\left(1-\frac{1}{3}Z^{-1}\right)}{\left(1-Z^{-1}\right)\left(1+2Z^{-1}\right)}\,|Z| > 2$

Using partial fractions expansion.

CODE No.:10BT30421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

ELECTRONIC DEVICES AND CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss temperature dependence PN diode VI characteristics.
b) Calculate the factor by which the current will increase in a silicon diode operating at a forward voltage of 0.4 Volts, when the temperature is raised from 25^{o} C to 125^{o} C.

2. a) Explain the circuit diagram of a Bridge rectifier and sketch the i/p and o/p waveforms.
b) Derive the expressions the ripple factor and efficiency for a bridge rectifier.

3. a) Draw the CE-configuration of transistor and explain input and output characteristics.
b) Explain how transistor works as amplifier.

4. a) What are the drawbacks of transistor fixed bias circuit?
b) Derive an expression for stability factor S in self bias circuit.

5. Derive the expressions for voltage gain, current gain, Input impedance, output impedance, voltage gain with respect to source and current gain with respect to source for generalized transistor amplifier at low frequencies.

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

7. a) What is Feedback in amplifiers? Explain.
b) Draw the circuit diagram of BJT RC Phase shift oscillator and derive the expression for frequency of oscillations.

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

CODE No.:10BT30422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

DIGITAL LOGIC DESIGN

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Perform the following operations to find out X, $(468)_8 = (X)_2$ and $(11001.011)_2 = (X)_{16}$.
b) Compare BCD and binary system of coding.

2. a) Show the arrangement of X-OR and X-NOR and explain with truth tables. Realize the above using AOI logic.
b) Reduce the following expressions and implement using any one of Universal logic gate (A+B) (C+D) and XX'+YY'.

3. a) Draw a logical circuit using basic gates to implement the following function
f(A,B,C,D,E) = ∑m (0,2,4,6,8,16,18,20,22,24,26,28,30)+ ∑d (3,7,11,15,19,23,27,31)
b) Simplify the following using K-Map
f(A,B,C,D) =∑m (0,3,5,6,9,10,12,15)

4. a) Draw and explain the operation of a multiplexer and also write its HDL code.
b) Design a priority encoder of 4-bit.

5. a) Define excitation table. Explain D-flip flop and obtain the state equation, the state diagram, state table and excitation table of the same.
b) Explain the operation of a JK flip flop and give the advantages of JK flip flop.

6. a) Compare the merits and demerits of ripple and synchronous counters.
b) Design a 4-bit ripple counter using T flip-flops.

7. a) Explain in detail about sequential programmable devices.
b) Explain in detail about ROM.

8. a) What do you mean by hazard? Classify and explain.
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 January - 2014

DISCRETE MATHEMATICAL STRUCTURES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is a tautology? Determine whether the statement $(P \wedge Q) \rightarrow (P \vee Q)$ is a tautology.
b) Obtain the principal disjunctive normal form of the formula:
$(p \rightarrow (q \wedge r)) \wedge (\sim p \rightarrow (\sim q \wedge \sim r))$

2. a) Are these premises $p \rightarrow r, q \rightarrow r, (p \vee q) \rightarrow r$ consistent? Justify your answer.
b) Write the following statement in the symbolic form "Every one who likes fun will enjoy each of these plays".

3. a) Draw the Hasse diagram of the set {2, 4, 8, 16} under the partial ordering relation "divides", and indicate those which are totally ordered.
b) Show that $f\langle x, y\rangle = x^y$ is a primitive recursive function.

4. (a) Let X be a set containing n elements, let X^* denote the free semigroup generated by X, and let $\langle S, \oplus \rangle$ be any other semigroup generated by any n generators ; then there exists a homomorphism g: $X^* \rightarrow S$.
b) The order of a subgroup of a finite group divides the order of the group.

5. a) Use mathematical induction to show that $1 + 2 + 2^2 + \ldots\ldots + 2^n = 2^{n+1} - 1$ for all nonnegative integers n.
b) In how many ways 3 boys share 15 different sized apples if each taken 5?

6. a) Solve the recurrence relation by substitution $a_n = a_{n-1} + n^2$ *where* $a_0 = 7$.
b) Solve the recurrence relation by using generating function
$a_n - 6a_{n-1} = 0$ *for* $n \geq 1$ *and* $a_0 = 1$.

7. a) Explain graph coloring problem with an example.
b) Give an algorithm to find articulation point of a graph.

8. a) Explain Breadth first search and Depth first search algorithm for a spanning tree.
b) Explain Kruskal's algorithm for finding minimal spanning tree.

CODE No.:10BT30502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

DATA STRUCTURES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain Merge Sort with suitable example. Write the C implementation of it.
b) Explain about sequential search and give its implementation in C.

2. a) Write a program to concatenate two single linked lists i.e list1 and list2. The resultant list3 should contain alternative elements from list1 & list2.
b) Write a program to create a single linked list with 'n' number of nodes.

3. Convert the following expression into prefix and postfix using stack
a) A+B*C/D+F
b) A+(B*C+D)/E/F

4. a) Give algorithms for doing inorder, preorder and postorder traversals of a binary tree.
b) Is it possible to represent a binary tree by using an array? If so, explain it along with its merits and demerits.

5. a) Explain about heap tree and give its implementation.
b) Give the applications of Heap.

6. Insert the following keys one by one and show the resulting B Tree of order 3. Keys are: 1, 2, 3, 4, 5, 6, 10, 13, 11, 12, 9, 8, 7, 15, 14. Your diagrams should be clearly showing which operation (like splitting a node.) is done at which node to restore the B Tree properties after each insertion.

7. a) Give Prim's minimum cost spanning tree algorithm. Show its working with a simple illustration.
b) Give an algorithm to do breadth first traversal of a graph. Show its working with an example.

8. a) Describe about collision in a hash table, and various collision resolution strategies.
b) Describe hash tables using chaining. What are its advantages and disadvantages when compared with open addressing?

CODE No.:10BT31001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

THERMODYNAMICS AND FLUID MECHANICS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With the help of the first law of thermodynamics prove that the internal energy is a property.
b) A cylinder contains 168 litres of gas at a pressure 1 bar and temperature 47^0C. If this gas is compressed to $1/12^{th}$ of its volume and the pressure is then 21 bar, find (i) the mass of the gas (ii) the temperature at the end of compression (iii) the index of compression (iv) the change in internal energy and (v) the heat rejected during compression. Take $\mathbf{C_p=1.089}$ and $\mathbf{C_v = 0.837}$ **KJ/Kg K**.

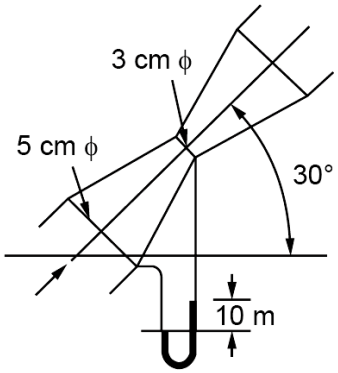
2. a) Compare Otto cycle, Diesel cycle and Duel cycle for given maximum temperature and pressure and for given maximum compression ratio on **p-v** and **T-s** diagrams.
b) Deduce an expression for air standard efficiency of an Otto cycle.

3. a) Derive an expression for efficiency and heat rate of a Rankine Cycle with neat sketches.
b) Draw Pressure *Vs* Volume, Enthalpy *Vs* Entropy and Temperature *Vs* Entropy diagrams for Rankine cycle.

4. a) Enumerate different ways of producing refrigeration with neat sketches.
b) Define Thermal Conductivity and Convective Heat transfer coefficient.

5. a) Derive an expression for capillary raise or fall h = $\dfrac{4\sigma\ Cos\theta}{\rho\, gd}$.
b) Deduce an expression for variation of pressure in a fluid at rest.

6. a) Prove that the stream function and potential function lead to orthogonality of stream lines and equipotential flow lines.
b) A venturimeter as shown in the figure below is used measure flow of petrol with a specific gravity of 0.8. The manometer reads 10cm of mercury of specific gravity 13.6. Determine the flow rate.



7. To study the pressure drop in flow of water through a pipe, a model of scale 1/10 is used. Determine the ratio of pressure drops between model and prototype if water is used in the model. In case air is used determine the ratio of pressure drops.

8. a) Explain the working principle of centrifugal and reciprocating pumps.
b) What is hydraulic turbine? Explain its classification.

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CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

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) Given $(75)_x = (61)_{10}$ then what is the value of x
b) What is ASCII code? What are the ASCII codes for decimal digits?
c) Explain with an example how error detection and correction can be done using hamming code.

2. a) Prove the following using Boolean algebra
i) **ABC +AB'C + A'BC + ABC' + AB'C +A'B'C = A+ B'C**
ii) **AB + ABC + A'B + AB'C = B + AC**
b) Implement the following logical expression using AND-OR-INVERTER gates and also using only NAND gates: **A + (B' + C) (D' +BE').**

3. a) Simplify the Boolean function using K-map
F (A.B, C, D) = A'B'C'+ B'CD'+ A'BCD'+AB'C'
b) Simplify the Boolean function using the tabulation method.
F (A.B, C, D) = ∑m (0, 1, 2, 8, 10, 11, 14, 15)

4. a) Implement the Boolean function with suitable multiplexer.
F (A.B, C, D) = ∑m (0, 1, 2, 4, 6, 9, 12, 14).
b) A combinational circuit is defined by the following three functions
F_1 = x' y' + x y z' , F_2 =x' + y , F_3 =x y + x' y'. Design the circuit with a decoder and external gates.

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

6. a) Draw the logic diagram of a 4 bit binary ripple counter using positive edge triggering.
b) Design Mod-10 Counter using JK Flip-Flops.

7. a) Draw the block diagrams of Mealy and Moore state machines and explain.
b) Explain the capabilities and limitations of Finite state machines.

8. a) Show the eight exit paths in an ASM block emanating from the decision boxes that check the eight possible binary values of three control variables x,y and z .
b) Explain the features of ASM charts.

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CODE No.:10BT41001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

ELECTRICAL & ELECTRONIC MEASUREMENTS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the construction, working principles and expression of torque equation for Moving iron instruments.
b) A simple shunted ammeter using a basic meter movement with an internal resistance of 1.8 kΩ and a full scale deflection current of 100μA is connected in a circuit and gives reading of 3.5mA on its 5mA scale. The reading is checked with a recently calibrated d.c ammeter which gives a reading of 4.1mA. The implication is that the ammeter has a faulty on its 5mA range.
Calculate: i) The actual value of faulty shunt
ii) The current shunt for the 5mA range.

2. a) Describe construction and working of shunt- type ohmmeter. Derive the design equations; Discuss the Advantages and Disadvantages of the shunt-type ohmmeter.
b) Explain the working principle of operation of a megger with the help of a neat diagram.

3. a) Describe the testing of energy meter by direct loading method.
b) Describe the testing of energy meter by phantom loading methods.

4. a) Draw the circuit of a Kelvin's double bridge. Derive the condition for balance.
b) Derive the equations of balance of an Andersons bridge. Draw the phase diagram for conditions under balance.

5. Why ordinary voltmeter cannot be used in electronic circuits and what is the difference between d.c voltmeter and a.c voltmeter? Discuss the construction and working of a electronic multimeters.

6. a) Explain the different modes of operations of Frequency, Time, time Period, Average time Period.
b) Explain with the help of functional block diagram, the working of heterodyne wave analyzer.

7. a) Draw the block diagram of basic CRO and explain each block.
b) Describe the principle of operation of a digital storage oscilloscope. Compare its performance with an analog storage oscilloscope.

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 I Semester (SVEC10) Supplementary Examinations June - 2014

PROBABILITY AND STATISTICS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Box A contains 5 red and 3 white marbles and box B contains 2 red and 6 white marbles. If a marble is drawn from each box, what is the probability that they are both of same color?

b) For the continuous probability function $\mathbf{f(x)=kx^2e^{-x}}$ when $\mathbf{x \geq 0}$, find (i) **k** (ii) mean (iii) variance.

2. a) Define Probability distribution function and write the properties of Distribution function.

b) A sales tax officer has reported that the average sales of the 500 business that he has to deal with during a year are Rs. 36,000 with a standard deviation of 10,000. Assuming that the sales in this business are normally distributed, find

(i) the number of business as the sales of which are Rs. 40,000.

(ii) the percentage of business the sales of which are likely to range between Rs.30,000 and Rs. 40,000.

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

X	3	6	5	4	4	6	7	5
Y	3	2	3	5	3	6	6	4

b) Find the equations of regression lines for the following data.

Age of husband:	18	19	20	21	22	23	24	25	26	27
Age of wife:	17	17	18	18	18	19	19	20	21	22

4. a) Define Null Hypothesis, Alternative Hypothesis and critical region.

b) If the population is 3, 6, 9, 15, 27

(i) List all possible samples of size 3 that can be taken without replacement from the finite population.

(ii) Calculate the mean of each of the sampling distribution of means.

(iii) Find the standard deviation of sampling distribution of means.

5. a) A sample of 400 items is taken from a population whose standard deviation is 10. The mean of the sample is 40. Test whether the sample has come from a population with mean 38. Also calculate 95% confidence interval.

b) The mean yield of wheat from a district A was 210 pounds with standard deviation 10 pounds per acre from a sample of 100 plots. In another district the mean yield was 220 pounds with standard deviation 12 pounds from a sample of 150 plots. Assuming that the standard deviation of yield in the entire state was 11 pounds, test whether there is any significant difference between the mean yield of crops in the two districts.

6. a) A random sample of size 16 values from a normal population showed a mean of 53 and a sum of squares of deviations from the mean equals to 150. Can this sample be regarded as taken from the population having 56 as mean? Obtain 95% confidence limits of the mean of the population.

b) Two horses A and B were tested according to the time (in seconds) to run a particular track with the following results.

Horse A	28	30	32	33	33	29	34
Horse B	29	30	30	24	27	29	

Test whether the two horses have the same running capacity.

7. In a process control study 15 samples, each of size 50 was drawn. The number of defective pieces are **3, 1, 2, 5, 4, 2, 3, 2, 5, 7, 1, 4, 2, 3, 1**. Find the control limits of the ***np***-chart and comment.

8. A one person barber shop has six chairs to accommodate people waiting for hair cut. Assume that customers who arrive when all the six chairs are full leave without entering the shop. Customers arrive at the average rate of 3 per hour and spend an average of 18 minutes for service. Find

i) the probability that a customer can get directly into the barber chair upon arrival
ii) expected number of customers waiting for haircut
iii) effective arrival rate
iv) the time a customer can expect to spend in the barber shop.

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ENVIRONMENTAL SCIENCES

[Electronics and Communication Engineering, Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the scope and importance of environmental science.
b) What are the atmospheric components?

2. a) What is mean by deforestation? Explain its adverse effects.
b) What is soil erosion? Explain the importance of micro climate.

3. a) Explain the terms: producers, consumers and decomposers.
b) Discuss the energy flow in an ecosystem.

4. a) Explain the value of biodiversity from all angles.
b) Illustrate man-wild life conflicts taking examples from Andhra Pradesh.

5. a) What is noise pollution? Explain.
b) Explain the indoor pollution and control.

6. a) Write an essay on 'Green technology'.
b) Explain briefly about global warming and acid rains.

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

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.:10BT3BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

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

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

Answer any FIVE questions
All questions carry equal marks

1. An infinitely long plane uniform plate is bounded by the two parallel edges and an end at right angles to them. This breadth is $\boldsymbol{\pi}$. This end is maintained at a temperature $\mathbf{u_0}$ at all points and other edges are at zero temperature. Determine the temperature at any point of the plate in the steady state.

2.

a) The plane $\frac{x}{a}+\frac{y}{b}+\frac{z}{c}=1$ meets the axis in A, B and C.
Apply Dirichlet's integral to find the volume of the tetrahedron OABC. Also find its mass if the density at any point is $\boldsymbol{kxyz}$.

b) Prove that

(i) $\int J_a(x)dx = c - J_2(x) - \frac{2}{x}J_1(x)$

(ii) $\int J_0^2(x)dx = \frac{1}{2}x^2(J_0^2(x)+J_1^2(x))$

3.

a) Separate $\tan^{-1}(x+iy)$ into real and imaginary parts.

b) Find the analytic function whose real part is $\frac{\sin 2x}{\cosh 2y - \cos 2x}$.

4.

a) Evaluate $\int_C (z-z^2)dz$, where C is the upper half of the circle $|z|=1$. What is the value of this integral if C is the lower half of the above circle?

b) Evaluate $\oint_C \frac{e^z}{(z+1)}dz$, where $C:|z-1|=3$.

5.

a) Find the Laurent's expansion of $f(z)=\frac{7z-2}{z(z+1)(z-2)}$ in the region $\mathbf{1<|z+1|<3}$.

b) Discuss about types of singularities of an analytic function. Also find the nature and location of the singularities of the function $f(z)=ze^{\frac{1}{z^2}}$.

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) Show that the equation $z^4+4(1+i)z+1=0$ has one root in each quadrant.

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

8.

a) Discuss the transformation $w=z^2$.

b) Find the bilinear transformations which maps the points $z=0,-1,\infty$ into the points $w=-1,-2-i,i$ respectively.

CODE No.:10BT3BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

MATRICES AND NUMERICAL METHODS

[Civil Engineering, Mechanical Engineering, Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Prove that the inverse of an orthogonal matrix is orthogonal and its transpose is also orthogonal.

b) For what values of k, do the equations $x + y + z = 1$, $2x + y + 4z = k$, $4x + y + 10z = k^2$ have a solution? Solve them completely.

2. a) Find the characteristic equation of the matrix $A=\begin{bmatrix} 1 & 3 & 7 \\ 4 & 2 & 3 \\ 1 & 2 & 1 \end{bmatrix}$. Show that the equation is satisfied by A and hence obtain the inverse of the given matrix.

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

3. a) Find a real root of the equation $x^3 - 2x - 5 = 0$ by the method of false position.

b) Fit a straight line for the following data:

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

4. a) Prove that $e^x = \left(\frac{\Delta^2}{E}\right) e^x \times \frac{Ee^x}{\Delta^2 e^x}$.

b) Apply Lagrange's method to find the value of x when f(x) = 15 from the given data.

x	5	6	9	11
f(x)	12	13	14	16

5. a) The population of a certain town is shown below:

Year	1951	1961	1971	1981	1991
Population (thousands)	19.96	39.65	58.81	77.21	94.61

Estimate the rate of growth of the population in the year 1981.

b) A river is 80ft. wide, the depth 'd' in feet at a distance 'x' ft. from one end of the bank is given below:

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

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

6. a) Using modified Euler's method, find y(0.1) and y(0.2) given that $y' = x + y, y(0) = 1$

b) Find y(0.1) and y(0.2) using Runge kutta fourth order method given that $y' = \dfrac{y^2 - x^2}{y^2 + x^2}, y(0) = 1$.

7. a) Form the partial differential equation by eliminating the arbitrary function from $f(x^2 + y^2,\ z - xy) = 0$.

b) A tightly stretched string of length ***l*** with fixed ends is initially in equilibrium position. It is set vibrating by giving each point a velocity $v_0 \sin^3\left(\dfrac{\pi x}{l}\right)$. Find the displacement y(x, t).

8. a) Find the Fourier series expansion for $f(x) = \begin{cases} -\pi; & -\pi < x < 0 \\ x; & 0 < x < \pi \end{cases}$ and hence deduce that $1 + \dfrac{1}{3^2} + \dfrac{1}{5^2} + \dfrac{1}{7^2} + \ldots\ldots = \dfrac{\pi^2}{8}$.

b) Obtain the half range sine series for $\mathbf{e^x}$ **in** $\mathbf{0<x<1}$.

CODE No.:10BT30101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

MECHANICS OF SOLIDS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the various types of stresses.
b) A solid steel bar 1.0 m long and 72 mm diameter is placed inside an aluminum tube having 75 mm inside diameter and 100 mm outside diameter. The aluminum tube is 0.5 mm longer than steel bar. An axial load of 750 kN is applied to the bar and tube through rigid cover plates. Find the stresses developed in the steel bar and aluminum tube. E for steel = 210 GPa and E for aluminum = 70 GPa.

2. a) What is point of contraflexure? Locate the same for an overhanging beam of simply supported span of 6m with one side overhanging portion of 2.5m, subjected to a UDL of 3kN/m. Draw the BMD and SFD.
b) Sketch the SFD and BMD of a cantilever beam of span 6m, subjected to concentrated load of 6kN and a clockwise couple of 10kN/m at the free end.

3. a) 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 chimney has external and internal dimensions of 2.0X2.0m and 1.5X1.5m respectively and height 13m. Find the maximum and minimum stress intensity at the base when it is subjected to wind pressure of intensity 1750N/m^2 acting in direction of a diagonal. Density of masonry is 22.0KN/m^3.

5. Design a solid steel shaft which will transmit 50 kW power at 120 rpm. The shear stress is to be limited to 60 N/mm^2 and the angle of twist is not to exceed 1^o in 3 m length.

6. A close coiled helical spring is made up of steel wire of 16 mm diameter and subjected to an axial load of 50 kN. Find the number of coils and the mean diameter of the spring if the elongation of the spring and the maximum shear stress in the spring wire are to be limited to 25 mm and 50 N/mm^2 respectively.

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) 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 2MPa. 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 - 2014

BUILDING MATERIALS AND CONCRETE TECHNOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

2. a) Explain manufacture of OPC.
b) Write the various ingredients and constituents of limestone.

3. a) Explain the various methods of seasoning of timber.
b) Write short notes on decay of timber.

4. a) Explain the use of steel as a building material.
b) Describe the application of the following materials in the construction:
(i) Rubber
(ii) Bituminous materials.

5. a) Explain the effect of time and temperature on workability of concrete.
b) Describe various precautions to be taken during mixing and vibration of concrete.

6. a) What are the factors that affect the shrinkage and creep of concrete and distinguish between the setting and hardening of concrete?
b) Explain the properties of Fresh and Hardened Self-compacting Concrete.

7. a) Explain the different types of shrinkage of concrete.
b) Design M 30 grade of concrete with medium workability using the following data:
Maximum size of aggregate: 20 mm
Specific gravity of cement: 3.15
Specific gravity of coarse aggregate: 2.65
Specific gravity of fine aggregate (Zone II): 2.65
Adopt IS code method.

8. a) Discuss the applications of polymer concrete.
b) Explain the factors affecting the properties of Fibre Reinforced Concrete.

CODE No.:10BT30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

BASICS OF ELECTRICAL AND MECHANICAL TECHNOLOGY

[Civil Engineering]

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

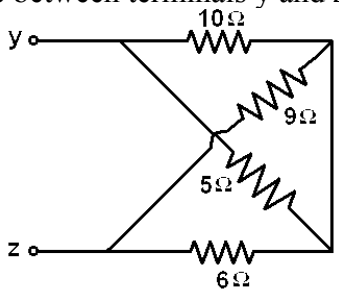
(Minimum of two questions from each part should be chosen for answering five questions)

All questions carry equal marks

PART - A

1. a) Explain Kirchhoff's laws with an example.

b) Find the equivalent resistance between terminals y and z in the figure shown below.



2. a) Derive the EMF equation of DC generator.

b) A 6 pole lap wound DC generator has 400 conductors on its armature. The flux per pole is 0.02 wb. Calculate: i) The speed at which the generator must be run to generate 400V. ii) What would be the speed if the generator were wave-wound to generate 200V?

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) Define the term 'voltage regulation 'referred to alternators. Write down the steps involved in predetermining the voltage regulation of alternator.

b) Draw the slip -torque characteristics of 3-phase induction motor and mark three important operating points on the characteristic. What is the significance of these operating points? Explain.

PART - B

5. a) Describe TIG welding process in detail and compare TIG and MIG Welding

b) Compare Brazing, soldering and welding.

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 vapour compression system of refrigeration.

b) What is air conditioning? Explain the comfort air-condition system.

8. a) Discuss the working principle of multi stage reciprocating air compressor.

b) Write short notes on:

(i) Bull dozers. (ii) Excavators.

CODE No.:10BT30104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

SURVEYING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A line was measured with a 30 m tape. This was standardized at 20^{o}C under a pull of 10 kg. The measured length was 1500 m. The temperature during measurement was 30^{o}C and the pull was 15 kg. Find the true length of the line if Coefficient of expansion = 3.5x 10^{-6} per ^{o}C. Modulus of elasticity = 2.1x 10^{-6} kg/cm^{2} and Cross-sectional area of the tape= 0.020cm^{2}.

2. Write detailed notes on Lehmann's method for resection by three point problem. Also write the Lehmann's rules.

3. a) Explain in detail the temporary adjustments of a dumpy level.
b) R.L.'s of the corners of 20 m side squares have been worked out and tabulated below. Prepare a contour map with 5 m interval starting from 515 m upwards

513	**518**	**527**	**535**	**543**	**550**
522	**519**	**526**	**537**	**547**	**548**
532	**533**	**528**	**530**	**537**	**537**
538	**543**	**533**	**521**	**531**	**530**
546	**542**	**532**	**516**	**522**	**523**
544	**535**	**527**	**513**	**510**	**513**

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

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

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

5. a) Explain the method of theodolite traversing by observing deflection angles for a closed traverse.
b) Coordinates of two points P and Q are (150 N, 200 E) and (1500 N, 1300 E) respectively. A third point R has been chosen in such a way that bearings of PR and QR are 29^{0} 30$'$ and 45^{0} 45$'$ respectively. Calculate the lengths of the lines PR and QR.

6. Two sets of tachometric readings were taken from an instrument station A, the reduced level of which was 100.06 m to a staff station B. Instrument P - Multiplying constant 100, additive constant 0.06 m, staff held vertical. Instrument Q - Multiplying constant 90, additive constant 0.06 m, staff held normal to the line of sight.

Instrument	**At**	**To**	**Height of instrument, m**	**Vertical angle**	**Staff readings, m**
P	**A**	**B**	**1.50**	**26°**	**0.755, 1.005, 1.255**
Q	**A**	**B**	**1.45**	**26°**	**?**

What should be the stadia readings with instrument Q?

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

8. a) Describe the basic principle of Electronic distance measurement and explain how to compute the distance from the phase differences.
b) Explain about global positioning system.

CODE No.:10BT30105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

FLUID MECHANICS-I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain capillarity and surface tension with neat sketches.
b) A rectangular plate of size 25 cm **x** 50 cm weighing 25 kgf slides down a 30^0 inclined surface at a uniform velocity of 2m/s. If the uniform 2 mm gap between the plate and the inclined surface is filled with oil, determine the viscosity of oil.

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

3. a) 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. Show that in case of a forced vortex flow, the rise of liquid level at the ends is equal to the fall of liquid level at the axis of rotation.

5. a) Derive the formulae for calculating loss of head due to
i) Sudden enlargement and ii) Sudden contraction
b) Two pipes of lengths 2500m each and diameters 80cm and 60cm respectively, are connected in parallel. The co-efficient of friction for each pipe is 0.006. The total flow is equal to 250 litres/s. Find the rate of flow in each pipe.

6. a) A 300 mm **x** 150 mm inclined venturimeter carries water. The reading recorded by an inverse U-tube manometer is 400mm. The specific gravity of the manometric fluid is 0.8. If the head loss between the inlet and throat is 0.3times the kinetic head of the pipe determine the discharge and coefficient of discharge.
b) A circular orifice of diameter 'd' is located at the bottom of a tank of length ***'l'***, width ***'d'*** and depth ***'h'***. If the tank is initially full, derive an expression for the time taken to empty the tank.

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) 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 - 2014

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the terms:
i) Dynamic viscosity and ii) Kinematic viscosity. Give their dimensions.
b) A pipe containing water at 172 KN/m² 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 to 75mm, what is the pressure in the lower pipe? Specific gravity of mercury is 13.6.

2. a) State and derive Bernoulli's theorem, mentioning clearly the assumptions underlying it.
b) A pipe line carrying oil of specific gravity 0.8, changes in diameter from 300mm at a position A to 500mm diameter to a position B which is 5m at a higher level. If the pressures at A and B are 19.62 N/cm² and 14.91N/cm² respectively, and the discharge is 150 litres/s, determine the loss of head and direction of flow.

3. a) Derive the formula for calculating loss of head due to sudden enlargement of a pipe.
b) A 20cm x 10cm Venturimeter is provided in a vertical pipe line carrying oil of specific gravity 0.8, the flow being upwards. The difference in elevation of the throat section and entrance section of the Venturimeter is 50cm. The differential U-tube mercury Manometer shows a gauge deflection of 40cm. Calculate: (i) the discharge of oil and (ii) the pressure difference between the entrance section and the throat section. Take c_d=0.98 and sp.gr of mercury as 13.6.

4. a) A jet of water having a velocity of 40 m/s strikes a curved vane, which is moving with a velocity of 20 m/s. The jet makes an angle of 30º with the direction of motion of vane at inlet and leaves at an angle of 90º to the direction of motion of vane at outlet. Draw the velocity triangles at inlet and outlet and determine the vane angles at inlet and outlet so that the water enters and leaves the vane without shock.
b) Derive the expression for the force exerted by a jet of water on an inclined fixed plate in the direction of the jet.

5. a) Make a neat sketch of a hydropower plant and show clearly the various elements.
b) The following data is available for a hydropower plant:
Available head = 140m
Catchment area = 200Sq.km
Annual average rainfall = 145cm
Turbine efficiency = 85%
Generator efficiency = 90%
Percolation and evaporation losses = 16%
Determine the power developed.

6. a) Explain the classification of turbines.
b) A Pelton wheel is required to develop 9000 kW at the shaft when working under a head of 300m. Assuming the values of coefficient of velocity, speed ratio and ratio of diameter of the wheel to the diameter of the jet as 0.98, 0.45 and 12 respectively, determine (i) the number of jets, (ii) the diameter of the wheel, (iii) the discharge required and (iv) the diameter of the jet. Take the speed of the wheel as 500 rpm and overall efficiency as 85%.

7. a) Define and Derive the expression for specific speed of a turbine.
b) A turbine develops 9000kW when running at 10 r.p.m. The head on the turbine is 30m. If the head on the turbine is reduced to 18m, determine the speed and power developed by the turbine.

8. a) With a neat sketch, explain the various components of a centrifugal pump and its working.
b) A double acting reciprocating pump has a piston area of 1000 cm^2 and a stroke length of 30 cm. If the pump is discharging 40 l/s of water at 45 rpm against a total head of 10 m, find the slip of the pump and power required to drive the pump.

CODE No.:10BT30201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

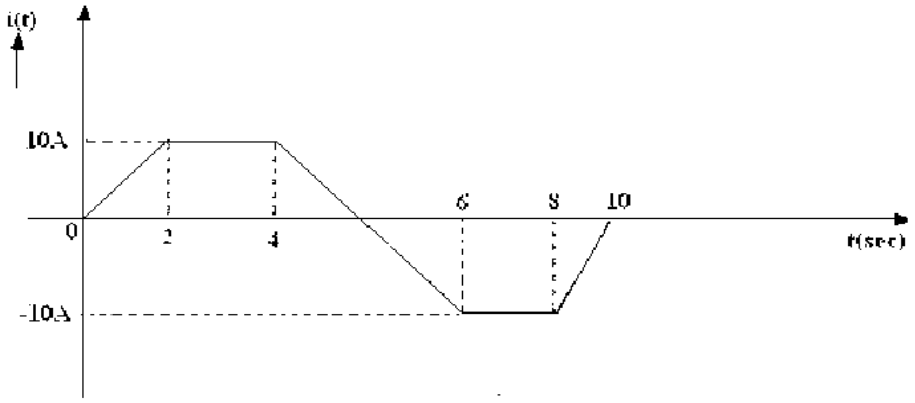
ELECTRICAL CIRCUITS

[Electrical and Electronics Engineering]

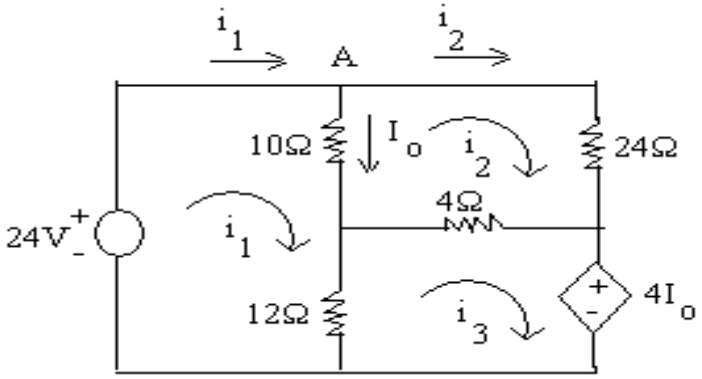
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain voltage - current relationship for passive elements.
b) A pure inductance of 3 mH carries a current of the wave form shown in figure. Sketch the waveform of V(t) and P(t). Determine the average value of power.



2. a) Define (i) Node (ii) Path (iii) Loop (iv) Branch
b) Using the mesh analysis find the current I_o in the circuit shown below



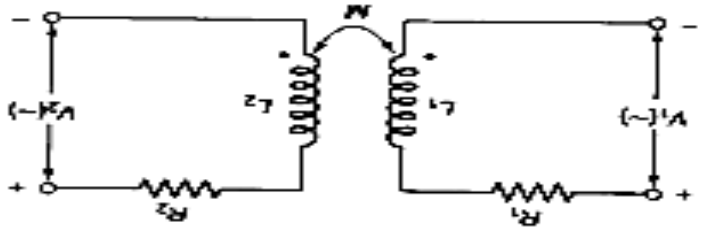
3. a) Define average value, RMS value, form factor and peak factor.
b) Obtain average value, RMS value, form factor and peak factor of a full wave rectified sine wave.

4. a) What is meant by locus diagram? Write its procedure.
b) A coil having resistance of 20 ohms and inductance of 5mH is connected in series with capacitor and is applied a constant voltage and variable current source. If the maximum current of 0.5 A at 500Hz is drawn, determine band width and half power frequencies

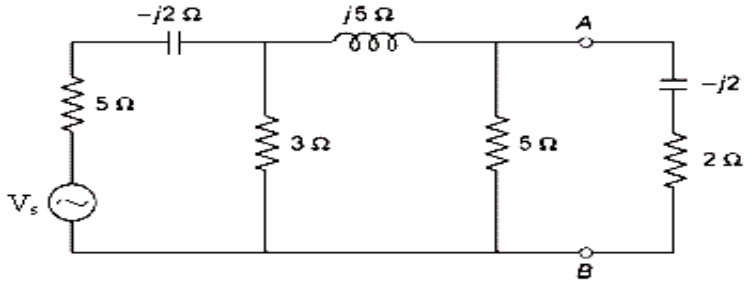
5. a) Derive the relation between phase and line values of a three phase star connected balanced system.
b) Three inductive coils, each with a resistance of 15 Ω and an inductance of 0.03 H are connected in delta to three phase, 400 V, 50 Hz supply. Calculate;
(i) phase current and line current (ii) total power absorbed.

6. a) Compare and contrast electrical and magnetic circuits.

b) Write the loop equations for the circuit shown in figure in time domain as well as frequency domain if $L_1 = L_2 = 3H$, $V_1 = 5 \sin \omega t$, $V_2 = 10 \sin (\omega t + 30^0)$. Assume M = 5H.

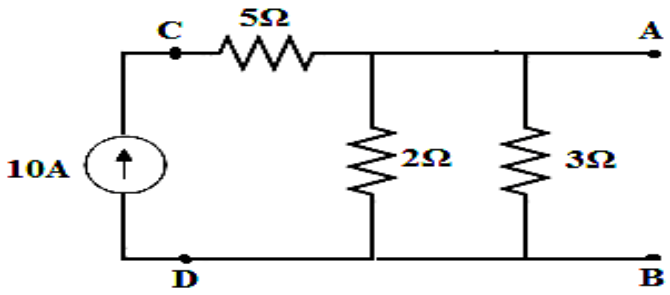


7. For the network shown in below figure, replace the circuit to the left of terminals 'AB' with the Thevenin equivalent. Then determine the current in the **(2-j2)** ohms impedance connected to the equivalent circuit



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

b) Verify the Reciprocity theorem by finding the voltage across the terminals A and B of the network shown below.



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CODE No.:10BT30202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

DC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw and explain fully the general block diagram representation of an electromechanical energy conversion device.
b) Derive expressions of field energy, co-energy and the magnetic force in a singly excited electromechanical unit.

2. a) Derive the EMF equation of a DC generator and also explain its principle of operation.
b) An 8-pole lap wound armature of a dc machine has 960 conductors, a flux of 40mwb/pole and speed of 400 rpm. Calculate the emf generated on open circuit. If the above armature were wave connected at what speed must it be driven to generate 400V?

3. a) Explain the process of building up of voltage in a dc shunt generator and give the conditions of self build up voltage.
b) A long compound generator delivers a full load current of 450A at 250 volts. Armature, series field and shunt field resistances are 0.03 ohms, 0.02 ohms and 50 ohms respectively. Calculate the generated emf and the power developed in the armature.

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. a) Explain the parallel operation of DC compound generators.
b) Describe the function of equalizing rings in DC generators.

6. a) Explain the principle of operation of DC motor in detail.
b) A 230V DC shunt motor has an armature resistance of 0.5 ohms and field resistance of 115 ohms. At no load, the speed is 1200 rpm and the armature current is 2.5A. On application of rated load, the speed drops to 1120 rpm. Determine the line and power input when the motor delivers rated load.

7. a) What is meant by speed control of a DC motor? Explain the various methods.
b) A 200 V shunt motor has armature and field resistance of 0.1Ω and 200Ω, respectively. The motor is driving a constant load torque and running at 1200 rpm drawing 10A current from the supply. Calculate the new speed and armature current if an external armature resistance of value 15Ω is inserted in the armature circuit. Neglect armature reaction and saturation.

8. a) Explain briefly Hopkinson's test for determining the efficiency of a DC machine.
b) A 200V, 14.92 kW DC shunt motor when tested by Swinburne's method gave the following results:

Running light: $I_a = 6.5A, I_f = 2.5A$; With armature cocked: $I_a = 70A$,

Potential across brushes = 3V. Estimate efficiency of machine working as generator at full load.

CODE No.:10BT30221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

BASIC ELECTRICAL ENGINEERING

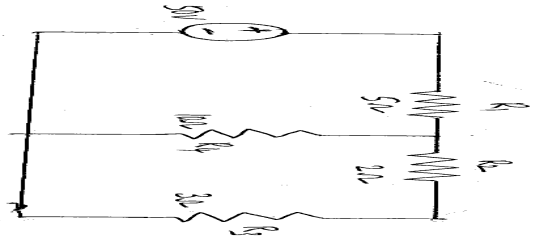
[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and explain ohms law
b) A circuit consisting of three resistances12Ω,18Ω and 36 Ω respectively joined in parallel is connected in series with a fourth resistance across a supply of 60V.It is found that the power drop in the 12Ω resistance is 36W.Determine the value of fourth resistance and total power dissipated in the group.

2. a) State Thevinin's theorem and find the current in resistance R_3 of the network shown below using Thevinins theorem



b) Explain source transformation with respect to electric circuits.

3. A series RLC series circuit consists of R=800Ω , L=80mH and C=8 pF. The applied voltage across the circuit is 100 V. Determine:
i) Total Impedance across the circuit
ii) Current flowing through the circuit and power factor of the circuit.

4. a) 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) Explain the principle of operation of DC Generator.
b) A 4-pole lap wound DC machine armature has 294 conductors.
Find (a) Flux per pole to generate 230V at 1500 r.p.m.

6. a) Write the principle of operation of a transformer.
b) Give the differences between Slip-ring and Squirrel-Cage Induction motor. State their applications.

7. Explain the operation of (i) Single Phase Induction Motor and (ii) Voltage Stabilizer.

8. With neat sketch explain about PMMC instrument.

CODE No.:10BT30222

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

FOUNDATIONS OF ELECTRICAL ENGINEERING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the expressions for the effective resistance of three resistors connected in (i) series and (ii) parallel
b) An AC current varying sinusoidally with a frequency of 50 HZ has an **rms** value of 15A.calculate the instantaneous value of current at
i) 2.5ms after the first current zero.
ii) 3.5ms after its positive maximum value.

2. a) Define the following terms
i) Node ii) Path iii) Branch iv) Mesh
b) Explain node analysis and mesh analysis with example.

3. a) Derive the RMS value of a sinusoidal wave.
b) Prove the average power consumed by a pure inductor is zero. Sketch the wave forms.

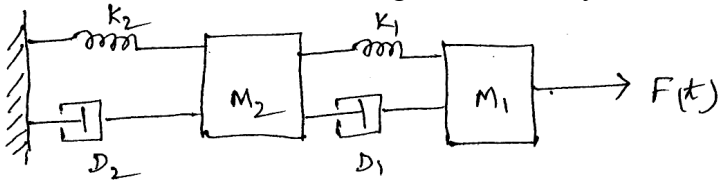
4. a) Derive EMF Equation of DC Generator.
b) A 4-pole wave wound DC machine armature has 294 conductors. Find (a) Flux per pole to generate 230V at 1500 r.p.m. (b) Electromagnetic torque at this flux when armature current is 120 A.

5. a) With neat sketch, explain the principle of operation of three phase induction motor.
b) A 1-Φ 50Hz transformer has primary voltage of 11kVand secondary voltage of 440V. If the max flux density is 1.2 wb/m^2 and the number of primary turns is 1400. Calculate :
i) Number of secondary turns.
ii) Area of cross section of core.

6. a) Write about the moving iron instruments.
b) Briefly explain about voltage stabilizers and UPS.

7. a) Write merits and demerits of open loop and closed loop control systems.
b) Write briefly as out linear and non linear control systems with examples.

8. a) Explain signal flow graphs and Mason's gain formula.
b) Determine the transfer function of the following mechanical system.



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

CIRCUIT THEORY

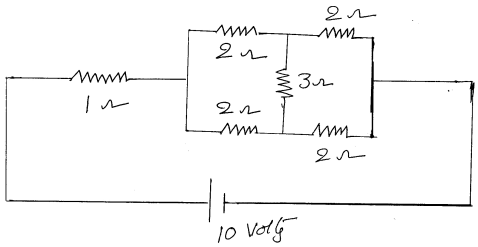
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

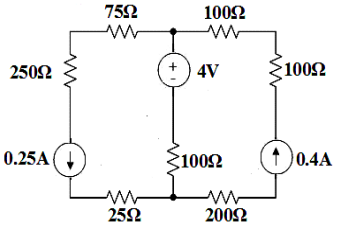
Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following
i) Ohm's law ii) Source transformation technique
iii) Star-Delta transformation iv) Current division and Voltage division rules

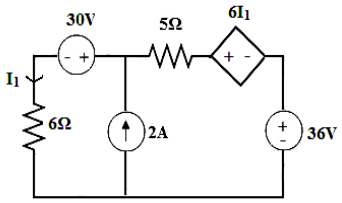
b) Find the power loss in 1Ω resistor in the figure shown below



2. a) In the circuit shown below, find the two mesh currents using mesh analysis.

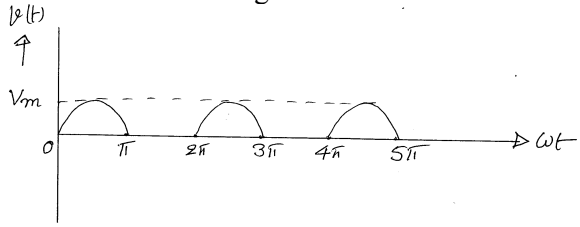


b) In the circuit shown below, find the current flowing through the 5Ω resistor, using nodal analysis.



3. a) Define the terms (i) average value (ii) RMS value (iii) Peak factor (iv) Form factor

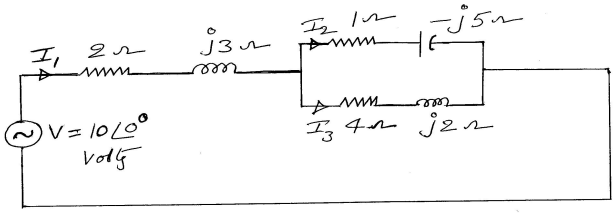
b) Find the average and RMS values of the following wave form. Also find form factor



4. Find the following for a series parallel circuit shown below

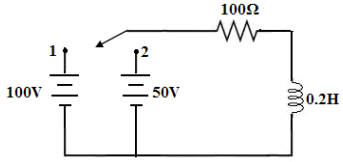
i) Total impedance ii) Current drawn from supply iii) Voltage across parallel branches
iv) Current in each parallel branch v) Power factor vi) Apparent, active and reactive powers

Draw the phasor diagrams showing V,I_1,I_2 and I_3



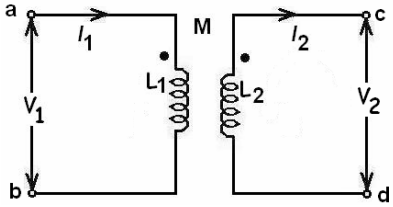
5. a) Derive the equation for the transient current i(t) in a series RLC circuit excited by a step input of V volts at time t=0. Assume zero initial conditions.

b) In the circuit shown below, the switch is closed on position 1 at t=0 there by applying the 100V source to the R-L branch, and at t=500 microseconds, the switch is moved to position 2. Obtain the equations for the current in both intervals.



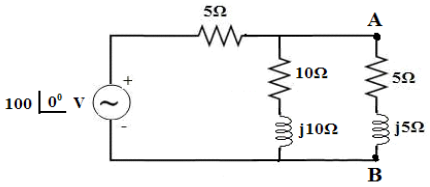
6. a) Differentiate between series and parallel Magnetic circuits.

b) In fig shown below, $L_1 = 4$ H, $L_2 = 9$ H, K = 0.5, $i_1 = 5 \cos (50t - 30^o)$ A, $i_2 = 2 \cos (50t - 30^o)$ A. Find the values of v_1, v_2, and the total energy stored in the system at t = 0.



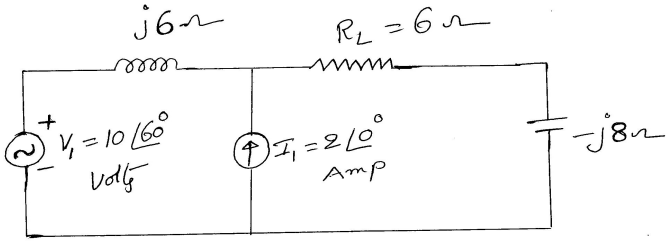
7. a) State and explain the Maximum power transfer theorem.

b) For the network shown below, find the current through the load impedance Z_L connected between terminals A and B, using Norton's theorem.



8. a) State and prove Tellegen's theorem.

b) Find the current in the resistor R_L using principle of superposition in below figure



CODE No.:10BT30224

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Show the relation between V, I and R.
b) Derive the star - delta transformation for a resistive network.
c) If 'n' number of resistors are having resistances of R_1, R_2, … ,R_n are connected in series and then find the total resistance.

2. a) With neat diagram, explain the functions of NVC and OLR in a three point starter.
b) A 4 pole lap connected shunt generator has 300 armature conductors and flux per pole of 0.1 Wb. It runs at 1000 rpm. The armature and field resistances are 0.2 and 125 ohms respectively. Calculate the terminal voltage when it is supplying 90A to load. Ignore armature reaction.

3. a) Explain briefly the principle of operation of single phase transformer.
b) A single phase 50 Hz transformer has 80 turns on the primary winding and 280 turns on the secondary winding. The voltage across the primary winding is 240V at 50 Hz. Calculate
i) the maximum flux in the core and ii) induced EMF in secondary.

4. a) What is an alternator? What is its operating principle and derive the e.m.f equation of an alternator?
b) Determine the voltage regulation of a 2000V single-phase alternator giving a current of 100A at 0.8 p.f. lead from the test results. Full-load current 100A is produced on short-circuit by a filed current of 2.5A. An e.m.f. of 500V is produced on open circuit by the same excitation. The armature resistance is 0.8 ohms.

5. a) Derive the expressions for ripple factor of full wave rectifier with and without a capacitive filter.
b) A half wave rectifier is fed by 220V, 50Hz via a step down transformer of turns ratio is 11:1. Find :
i) The output DC
ii) Peak inverse voltage under no load condition.

6. a) Describe the basic structure and operation of a SCR and give two-transistor versions of a SCR. Explain why always silicon, and not germanium, is used in construction of a SCR.
b) Draw and discuss the V-I characteristics of a SCR.

7. a) Explain how induction heating is used for industrial applications.
b) Explain briefly about theory of dielectric 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) Supplementary Examinations June - 2014

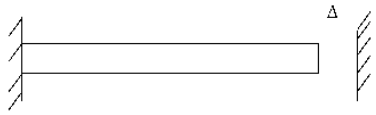
STRENGTH OF MATERIALS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the relationship between the three elastic constants *E, K* and *G* of an isotropic material.
b) A bronze bar 3 m long with a cross sectional area of 320 mm^2 is placed between two rigid walls as shown in figure at a temperature of -20°C, the gap Δ = 25 mm. Find the temperature at which the compressive stress in the bar will be 35 MPa. Use $\alpha = 18.0 \times 10^{-6}$ m/(m°C) and *E* = 80 *GPa*.



2. a) Define the following:
i) Bending moment
ii) Shear force
iii) Point of contraflexure
b) A cantilever beam of length 2 m carries a uniformly distributed load of 3 kN/m over a length of 1.5 m from its fixed end and a point load 5 kN at its free end. Draw the shear force and bending moment diagrams.

3. A T-section beam of dimensions 100mm **x** 80mm **x** 20mm is used as a cantilever of span 1m. If it carries a 5 KN load at the free end, what additional UDL can be applied on it for bending stress not to exceed 120 MN/m^2.

4. A beam of I section 400mm × 200mm has a web and flange thickness 20mm. Calculate the maximum intensity of shear stress across the section and sketch the shear stress distribution across the section of the beam, if it carries a shearing force of 300 kN at a section.

5. a) Derive an expression that governs the theory of pure torsion.
b) A hollow circular shaft of external diameter 50mm and wall thickness 5mm transmits a torque of 10kN-m. Find the maximum shear stress induced in the shaft.

6. An overhanging beam ABC with supports at A and B with AB= 6 m and overhang BC = 3m is carrying a concentrated load of 10 KN at C. Find the slopes over each support and at the right end. Find also the maximum upward deflection between the supports and the deflection at the right end. **$E = 2 \times 10^5$ N/mm^2, $I = 5 \times 10^8$ mm^4**.

7. A thin spherical shell is of 1m diameter and 5mm thickness. Determine the changes in diameter and volume of the shell when the water under a pressure of 1.5 MPa is admitted into it. Take E=0.2 MPa and Poisson's ratio 0.3.

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

CODE No.:10BT30302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

MATERIALS SCIENCE AND METALLURGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Show different Lattice structures with diagrams.

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

3. a) Explain the experimental methods of construction of equilibrium diagrams.
b) Explain critical temperature with respect to cooling and heating diagrams.

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

5. a) Why does stainless steel have less machinability compared to cast iron?
b) Explain age hardening treatment.

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

7. a) Define the term ceramics and explain.
b) What are structural ceramics? Discuss the important structural ceramics with examples and applications.

8. Explain the terms Compacting and Sintering in powder metallurgy.

CODE No.:10BT30303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

THERMODYNAMICS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the causes for Irreversibility? How can you represent Irreversible process on any property diagram?
b) Define Path function and Point function. Give examples for each. What are the similarities of Work and Heat?

2. a) Define SFEE. How it reduces for the case of a heat exchanger?
b) Air at a pressure of 1 bar and 25^0C is heated at constant volume till the pressure is doubled. It is then expanded isothermally to the original pressure and cooled to the initial condition at constant pressure. Show the process on *p-V* and *T-s* diagrams and calculate the work and heat interactions during the processes.

3. a) Derive efficiency/ CoP relations for Heat Engine/Heat pump and Refrigerator, assuming that they are reversible devices operating on Carnot Cycle.
b) Plot Carnot's Cycle on PV and TS diagrams and derive relations for its efficiency.

4. a) Derive expressions for entropy changes for a closed system for the following cases: (i) Heat a gas at constant volume and (ii) Polytropic process
b) Air at 15^0C and 1.05 bar occupies 0.02 m^3. The air is heated at constant volume until the pressure is 4.2 bar and then cooled at constant pressure back to the original temperature. Calculate the net heat flow to or from the air and the net change in entropy. Sketch the process on a ***T-s*** diagram.

5. a) Explain with neat sketches the salient regions, salient lines and salient states for three phase diagram P-V-T of Water
b) Derive Clausius Clapyron equation.

6. A mass of 6 kg of air at a pressure of 150 kPa and temperature 360^0 K is compressed polytropically to 750 kPa according to law $PV^{1.2}$ = constant. The air is then cooled to initial temperature at constant pressure. The air is then heated at constant temperature till it reaches original pressure of 150 kPa. Draw the cycle on TS diagram and determine the work, heat transfers and entropy changes for the cycle and all the processes.

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

8. a) Define: 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.:10BT30304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

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:
   (a) Internal thread (b) Splined shaft (c) leaf spring with eye (d) glass

2. Sketch any two of the following
   (a) Transition fit
   (b) Surface texture before machining
   (c) Draw the auxiliary views for the circle
   (d) Convention of showing full section

3. Sketch the following:
   (a) Hole base system (b) Surface texture after machining

4. Sketch the following:
   (a) Parallel and taper sunk keys (b) Any Two forms of keyways

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

1) Draw the half sectional front view from front (with top half in section) and the view from side of a Cotter Joint of Sleeve type, to connect two rods of 50 mm diameter each.

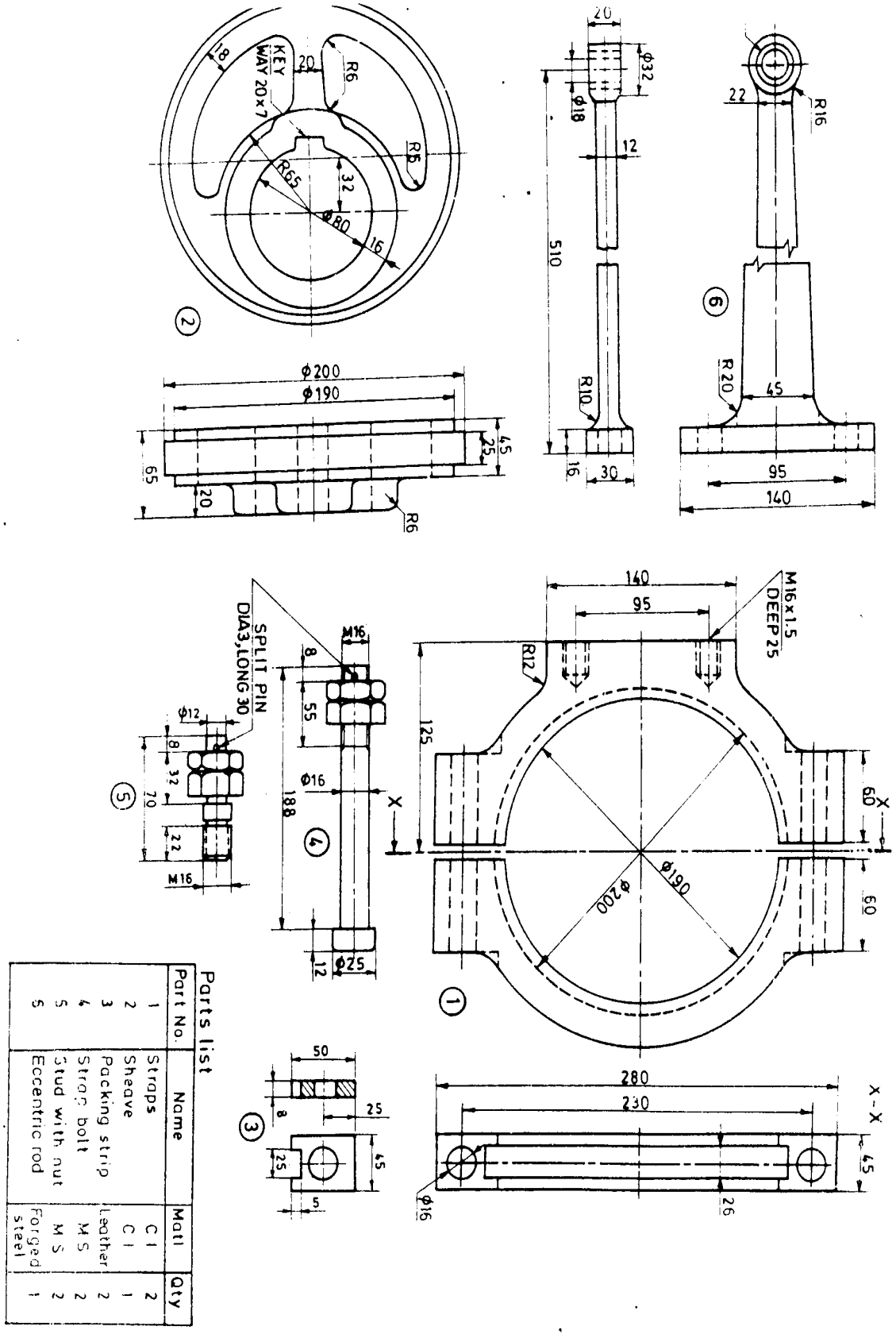
2) Draw the sectional view from front and the view from above of (i) Single Riveted, Double Strap Butt Joint and (ii) Single Riveted Lap Joint, to join plates of 10 mm thickness.

3) Draw the half sectional view from front (Top half in section) and the view from the side of a Butt Muff Coupling to connect two shafts, each of diameter 50 mm.

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

1. Assemble all parts of the Eccentric shown in Figure-1 and draw,
   (i) Front view - upper half in section (ii) Top view - full in section (iii) Left end view

2. Prepare the part drawing of the Revolving center as shown in Figure-2 and indicate dimensions, fits and tolerances if any.



Parts list

Part No.	Name	Matl	Qty
1	Straps	C I	2
2	Sheave	C I	1
3	Packing strip	Leather	2
4	Strap bolt	M S	2
5	Stud with nut	M S	2
6	Eccentric rod	Forged steel	1

Figure-1: ECCENTRIC

Part No.	Name	Material	Qty.
1.	Barrel	Plain carbon steel	1
2.	Radial ball bearing	Standard part	1
3.	Thrust ball bearing	Standard part	1
4.	Centre	Case hardened alloy steil	1
5.	Front cover	M.S.	1
6.	Screw	M.S.	3
7.	Sleeve	M.S.	1
8.	End cover	M.S.	1

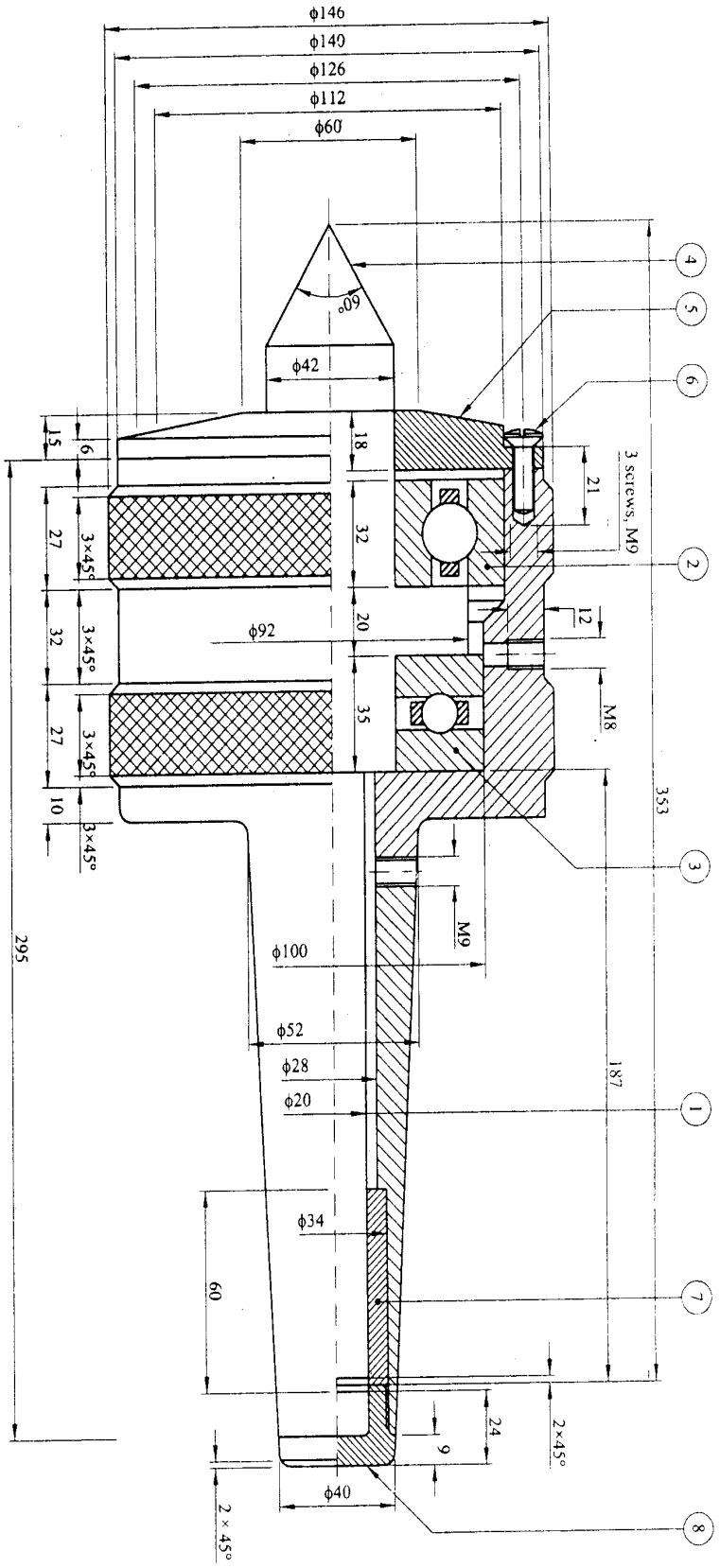


Figure-2 REVOLVING CENTER

CODE No.:10BT30401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

SEMICONDUCTOR DEVICES AND CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

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

2. a) With circuit and necessary waveforms explain the operation of Bridge Rectifier.
b) Design a filter for FWR circuit with LC filter to provide an output voltage of 10 Volts with a load current of 200 mA and the ripple is limited to 2%.

3. a) With neat sketch explain the different current components of transistor.
b) In an NPN transistor emitter is grounded, base is connected with 4 Volts supply in series with 100 K ohms resistor and collector base is connected with 4 Volts supply in series with 2 K ohms. Assume V_{CC} = 12 Volts, V_{BE} = 0.7 Volts, β = 100. Find I_B, I_C and I_E.

4. a) Explain thermal runaway and thermal resistance.
b) Explain the bias compensation using sensistors.

5. Derive the expression for A_v, A_i, I/P impedance and O/P impedance of CE amplifier using exact and approximate models.

6. a) With neat structure explain the principle of operation of depletion MOSFET.
b) Explain drain characteristics of JFET.

7. Derive the expressions for voltage gain, Input admittance and output resistance of a common source amplifier.

8. Write short notes on:
a) Varactor diode
b) Schottky barrier diode

CODE No.:10BT30402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

PROBABILITY THEORY AND STOCHASTIC PROCESSES

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

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

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

2. a) Define and explain the following density functions
i) Exponential ii) Rayleigh
b) A random variable X is known to be Gaussian with a_X =1.6 and σ_X=0.4 find
i) P(1.4 < X ≤ 2.0) and (ii) P{-0.6 < (X - 1.6) ≤ 0.6) }.

3. a) State and prove properties of characteristic function of a random variable X.
b) Let X be random variable defined by the density function
$f_X(x) = (5/4)(1-x^4)$ for 0<x<=1 and 0 elsewhere. Find E[X], E[X^2] and variance.

4. a) Explain Marginal density function with examples.
b) Find the density function of W=X+Y, where the densities of X and Y are assumed to be:
$f_x(x)=0.5[u(x)-u(x-2)]$; $f_y(y)=0.25[u(y)-u(y-4)]$.

5. a) Two random variables X and Y have means 1and 2 respectively, variances of 4 and 1, and a correlation coefficient 0.4. New random variable W and V are defined by W=X+3Y and V=-X+2Y. Find the means ,variances, correlation coefficient and the correlation of the new random variables W and V.
b) Define joint characteristic function and what its use is.

6. Explain about random processes.

7. a) Define cross correlation function of two random processes X(t) and Y(t) and state the properties of cross correlation function.
b) Let two random processes X(t) and Y(t) be defined by
$X(t) = A \cos \omega_0 t + B \sin \omega_0 t$; $Y(t) = B \cos \omega_0 t - A \sin \omega_0 t$
Where A and B are random variables and ω_0 is a constant. Assume A and B are uncorrelated, zero mean random variables with same variance. Find the cross correlation function R_{XY} **(t,t+τ).**

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 - 2014

SIGNALS AND SYSTEMS

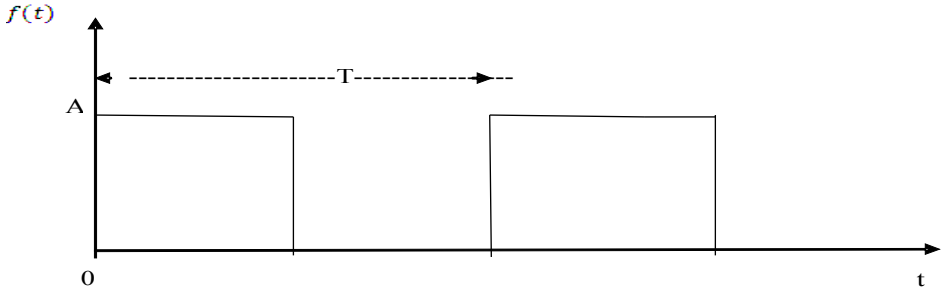
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

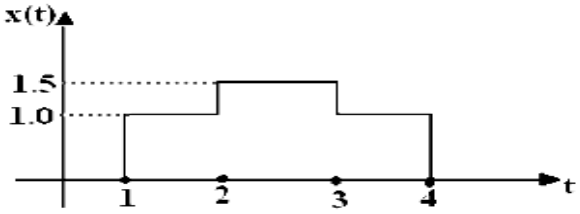
Answer any FIVE questions
All questions carry equal marks

1. a) Find the even and odd components of a) **x (t) = cos t + sin t** (b) **$x(t)= e^{j2t}$**
b) Test the whether the signal is periodic or not. If so find the fundamental Period.
(a) **$x(t)= e^{J10t}$** (b) **x(t)= cos(π/3 t) +sin (π/5 t)** (c) **cos(t + π/4).**

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



3. a) Find out the Fourier Transform of the Cosine wave x(t) = A Cos (2πfct) u(t). Hence plot its amplitude spectrum.
b) Find the Fourier Transform of the signal shown figure



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. Find Convolution of two pulses of equal amplitude and equal duration (both graphically and analytically).

6. a) State the properties of the ROC of Laplace Transform.
b) Determine x(t) and ROC for the function

$$X(s) = \frac{(s+1)^2}{s^2 - s + 1}; \mathrm{Re}\{S\} > 1/2$$

7. a) Define sampling theorem for time limited signal and find the Nyquist rate for the following signals.

i). sinc20t ii) 4 sinc2100t.

b) Discuss effect of under sampling.

8. a) Obtain the relationship among the Fourier Transform, Laplace Transform and Z-Transform.

b) Find the Inverse Z-Transform of $X(Z) = \frac{\left(1 - \frac{1}{3}Z^{-1}\right)}{\left(1 - Z^{-1}\right)\left(1 + 2Z^{-1}\right)} 1Z1 > 2$

Using partial fractions expansion.

CODE No.:10BT30421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ELECTRONIC DEVICES AND CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operation of p-n junction diode and justify that it conducts only on one direction.
b) If the reverse saturation current I_O = 20 μA at 25^{o}C, determine I_O at 60^{o}C.

2. a) With circuit and necessary waveforms explain the operation of Bridge Rectifier
b) Derive the general expression for ripple factor in rectifier circuits.

3. a) Explain input and output characteristics of CE configuration.
b) Explain and derive current components of PNP BJT. What are emitter efficiency, transport factor and large signal current gain?

4. a) What are the drawbacks of transistor fixed bias circuit?
b) Derive an expression for stability factor ***S*** in self bias circuit.

5. Derive the expressions for voltage gain, current gain, input impedance, output impedance, voltage gain and current gain with respect to source for generalized transistor amplifier at low frequencies.

6. a) Discuss the relationship between FET parameters.
b) Discuss voltage divider biasing of JFET.

7. a) With the help of circuit diagram, explain Colpitts oscillator.
b) Discuss different effects of negative feedback in amplifiers.

8. Write short notes on :
(a) Photo Diode
(b) SCR
(c) 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 - 2014

DIGITAL LOGIC DESIGN

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Convert the given Gray code number to equivalent binary 1001001011110010.
b) Convert $(A0F9.0EB)_{16}$ to decimal, binary, octal.

2. a) Obtain dual of the following Boolean expressions.
(i) AB+A(B+C)+B'(B+D) (ii) A+B+A'B'C.
b) Obtain the compliment of the following Boolean expressions.
(i) A'B+A'BC'+A'BCD+A'BC'D'E. (ii) ABEF+ABE'F'+A'B'EF.

3. a) Minimize the following expressions using K-map and realize using NAND Gates. $f = \sum m(1,3,5,8,9,11,15) + d(2,13)$
b) Minimize the following expression using K-map and realize using NOR Gates. $f = \prod M(1,2,3,8,9,10,11,15) \cdot d(7,1,5)$

4. a) Implement full adder with 4 to 1 multiplexer.
b) Implement 64 **x** 1 multiplexer with four 16 **x** 1 and one 4 **x** 1 multiplexer.

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

7. a) What is ROM? Discuss in brief about different types of ROMs.
b) Write a brief note on sequential programmable devices.

8. a) Write short notes on hazards in combinational circuits.
b) Briefly explain about Race - Free State assignment hazards.

CODE No.:10BT30501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

DISCRETE MATHEMATICAL STRUCTURES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Show that $((P \vee Q) \wedge \neg(\neg P \wedge (\neg Q \vee \neg R))) \vee (\neg P \wedge \neg Q) \vee (\neg P \wedge \neg R)$ is a tautology.
b) Obtain the principal disjunctive normal form of the formula $P \rightarrow (P \wedge (Q \rightarrow P))$.

2. a) Show that $R \rightarrow S$ can be derived from the premises $P \rightarrow (Q \rightarrow S)$, $\neg R \vee P$, and Q.
b) Show that $\neg P(a,b)$ follows logically from (x) (y) $(P(x, y) \rightarrow W(x,y))$ and $\neg W(a,b)$.

3. a) Define partial and total order of relations.
b) Draw Hasse diagram of {1,2,3,6,12} under the partial ordering relation 'divided'.

4. a) Consider the semi group (R^+, X) and $(R, +)$ where R^+ is the set of all positive real numbers with usual meanings of +, X . Let the function $f: R^+ \rightarrow R$ be defined by $f(x) = \log x$ for any $x \in R^+$. Is f an isomorphism ? Justify.
b) Let f be a homomorphism from a group G_1 to the group G_2 then show that
i) if e_1 is the identity in G_1 and e_2 is the identity in G_2 then $f(e_1) = e_2$
ii) $f(a^{-1}) = [f(a)]^{-1}$ for all $a \in G_1$.

5. a) 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) Solve the recurrence relation by substitution $a_n = a_{n-1} + n^3$ where $a_0 = 5$.
b) Solve the recurrence relation by using generating function $a_n - 3a_{n-2} + 2a_{n-3} = 0$ for $n \geq 3$ and $a_0 = 1, a_1 = 0, a_2 = 0$.

7. a) Show that a tree with n vertices has exactly (n-1) edges.
b) Show that a connected multigraph has an Euler circuit if and only if each of its vertices has even degree.

8. a) 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) Supplementary Examinations June - 2014

DATA STRUCTURES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain Shell sort with suitable example and write its implementation in C.
b) What is an ADT? Give ADT for implementing stack using generic code.

2. Define or briefly describe about each of the following with a suitable illustration.
(i) Singly linked list (ii) doubly linked list (iii) circularly linked list and (iv) multi linked list.

3. a) Suppose T is a binary search tree and having 'n' nodes / elements. What is the minimum and maximum height of this binary search tree?
b) What is the minimum and maximum number of elements in a heap of height 'h'?

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

5. a) 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 about various cases with simple illustrations that arises when deleting a key from a B-Tree of order *m*.

7. a) Given two sets S1 and S2 (each of size n) and a number x, describe an efficient algorithm for finding whether there exists a pair of elements one from S1 and one from S2 that add up to x (use merge sort or quick sort to make algorithm efficient).
b) If 'n' integers are arranged in an array with descending 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. a) What is collision and probing in hashing? Explain different kinds of probing with suitable examples.
b) Perform the insertion operation for Open Addressing Hashing using quadratic probing technique for the following list : 6, 12, 34, 29, 28, 11, 23, 7, 0, 33, 30, 45.

CODE No.:10BT31001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

THERMODYNAMICS AND FLUID MECHANICS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the concept of internal energy with examples.
b) What are the limitations of first law of thermodynamics?

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

3. a) Describe the different properties of steam.
b) Compare and contrast between boiler mountings and accessories.

4. a) Describe the working principle of vapor compression refrigeration system with a neat sketch.
b) Explain the concept of Steffan Boltzman's law in radiation heat transfer.

5. a) Define the terms i) specific gravity ii) viscosity iii) specific weight.
b) Differentiate among atmospheric, gauge, absolute pressures.

6. a) Briefly explain about the stream line, streak line and path line.
b) Starting from fundamentals, derive the Bernoulli's equation.

7. a) What is dimensional analysis? Explain the methods of determination of dimensionless groups.
b) Explain the term dimensional homogeneity.

8. a) What are the advantages of centrifugal pump over reciprocating pumps?
b) Explain how hydraulic turbines are classified.

CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

SWITCHING THEORY AND LOGIC DESIGN

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Convert the following numbers
i) $(41.6875)_{10}$ to binary ii) $(1001001.011)_2$ to decimal
iii) Find the 9's Complement of number $(25.639)_{10}$
b) A receiver with even parity Hamming code is received the data as 1110110. Determine the correct code.
c) Subtract 111001 from 101011 using 2's complement.

2. a) Simplify the following Boolean expressions to a minimum number of literals.
i) A'C'+ABC+AC' ii) (x'y'+ z)'+z+ xy +wz iii) (A'+C) (A'+C') (A+B+C'D)
b) Obtain the Dual of the following Boolean expressions.
i) AB'C+AB'D+A'B' ii) A'B'C+ABC'+A'B'C'D
c) What you mean by min terms and max terms of Boolean expressions?
d) Prove that AND-OR network is equivalent to NAND-NAND network.

3. a) Simplify the following Boolean function for minimal POS form using K-map.
$F(W,X,Y,Z) = \boldsymbol{\pi}(4,5,6,7,8,12) + \mathbf{d}(1,2,3,9,11,14)$
b) Simplify the following Boolean expressions using K-map and implement them using NAND gates: F (W, X, Y, Z) = W'X'Y'Z' + WXY'Z' + W'X'YZ + WXYZ.

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) Design a combinational circuit using a PROM. The circuits accept 3 bit binary number and generate its equivalent Excess-3 code.
b) Derive the PLA programming table for the combinational circuit that squares a 3 bit number.

6. a) Draw a 3 bit Jhonson counter and explain.
b) Design a 3 bit asynchronous UP/DOWN counter.

7. Determine minimal state equivalent of State table given below

P S	NS,z	
	X=0	X=1
A	B,1	H,1
B	F,1	D,1
C	D,0	E,1
D	C,0	F,1
E	D,1	C,1
F	C,1	C,1
G	C,1	D,1
H	C,0	A,1

8. a) Draw the ASM chart for weighing machine and explain with an example.

b) Draw the ASM chart for the following state transition:

i) If x=0, controls goes from T_1 to T_2;

ii) If x=1, generate a condition operation and go from T_1 to T_2.

CODE No.:10BT41001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ELECTRICAL AND ELECTRONIC MEASUREMENTS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the types of electrical measuring instruments and explain the operation of integrating instrument.
b) The resistance of a milliampere meter is 10 ohms and it gives a maximum reading of 15 milliamperes. State how it may be used to measure an emf of 100 volts. What will be the power lost in the meter?

2. a) Describe the construction and working of a polar type potentiometer.
b) Explain the standardization procedure for polar type potentiometer.

3. a) Define the testing of meter and list out the method of testing of Energy meters. Explain each method in brief.
b) The meter constant of a 10A, 250V ampere- hour meter is 5 ampere-second per revolution. Calculate the speed of the disc in rpm at full load and the number of revolutions per KWH. The meter was subjected to a test -run at half load when it took 99 seconds to complete 100 revolutions. Calculate the percentage error in the meter.

4. a) Explain the working principle of Schering bridge and derive an expression for measurement of unknown capacitor.
b) Explain Wagnar ground connection and show that it minimizes the stray capacitance effects in bridge circuit.

5. What are the advantages of average reading ac voltmeters and how can an average reading VTVM is converted to an RMS reading voltmeter? Explain the construction and principle of operation of True RMS reading Voltmeters.

6. a) Explain the different modes of operations of Frequency, Time, time Period, Average time Period.
b) Explain the frequency synthesizer, with neat diagram and advantages and disadvantages.

7. a) Derive an expression of vertical deflection on the screen of a CRT in terms of length of plates, separation distance, accelerating voltage and distance of screen from the origin.
b) The X- deflecting plates in a CRT are 15mm long and 6mm apart. The centre of the plates is 20cm from the screen. The accelerating voltage is 2.5kv. Determine the deflection sensitivity and deflection factor of CRT.

8. a) Briefly explain different types of spectrum analyser.
b) What are the necessities of recorders? Explain the working principle of X-Y recorders.

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

OPTIMIZATION TECHNIQUES

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Define optimization .classify the optimization problems.

2. By applying kuhn-Tucker conditions
Maximize $\mathbf{f = 8X_1+4X_2+X_1X_2-X_1^2- X_2^2}$
Subject to $\mathbf{2X_1+3X_2 \le 24}$; $\mathbf{-5X_1+12X_2 \le 24}$; $\mathbf{X_2 \le 5}$

3. Use two-phase simplex method to solve
Minimize $z = 15/2\, x_1 - 3x_2$
Subject to Constraints $3x_1 - x_2 - x_3 \ge 3;$ $x_1 - x_2 + x_3 \ge 2;$ $x_1, x_2, x_3 \ge 0.$

4. Solve the following assignment problem

		Job				
		1	2	3	4	5
Person	A	8	4	2	6	1
	B	0	9	5	5	4
	C	3	8	9	2	6
	D	4	3	1	0	3
	E	9	5	8	9	5

5. Find the minimum value of the function $f = \lambda / \log \lambda$ using quadratic interpolation method (take the initial trail step length as 0.1)

6. Minimize $\mathbf{f(x_1,x_2) = x_1 - x_2 + 2x_1^2 + 2x_1x_2 + x_2^2}$ from the starting point $X_1 = \begin{Bmatrix} 0 \\ 0 \end{Bmatrix}$ using Powell's method.

7. Minimize $f(X)= x_1^2 + x_2^2 - 6x_1 - 8x_2 + 10$
Subject to $4x_1^2 + x_2^2 \le 16$
$3x_1+5x_2 \le 15$
$x_i \ge 0,\ i=1,2$
by using the following methods with the starting point $X_1 = \begin{Bmatrix} 1 \\ 1 \end{Bmatrix}$:

i) Interior penalty function method
ii) Exterior penalty function method.

8. Determine the values of u_1, u_2, and u_3 using dynamic programming so as to ,
Maximize $\mathbf{u_1u_2\, u_3}$; Subject to $\mathbf{u_1+u_2+u_3=10}$ and $\mathbf{u_1, u_2, u_3 \ge 0}$

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

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. Managerial economics is prescriptive rather than descriptive in character. Examine this statement.

2. Explain the concepts of isoquants and isocosts. Analyze how the manufacturer reaches the least cost combination of inputs. Illustrate.

3. Explain the meaning of 'Penetration Pricing' and 'Skimming Pricing' and also explain the situations under which such prices are fixed by the firms.

4. Distinguish between a joint stock company and partnership firm.

5. From the following balances taken from the ledger of Ram & Co. Prepare a trial balance as on 31-12-2011

Particulars	Rs	Particulars	Rs
Cash	85,600	Bank	7,800
Capital	1,00,000	Creditors	6,000
Purchases	40,000	Discount received	200
Sales	35,000	Discount allowed	500
Salaries	5,000	Advertisement	700
Furniture	300	Interest received	500
Stationery	800	Drawings	1,000

6. Trail Balance and adjustments of Charandas as on 31.12.2005 are given below. Prepare Trading, Profit & Loss Account and Balance Sheet.

Particulars	Dr. (Rs)	Cr. (Rs)
Cash in hand	2,000	
Cash at bank	17,100	
Purchase, Sales	50,000	1,30,000
Returns	700	600
Debtors	17,000	
Wages	12,400	
Fuel, Power	6,000	
Carriage	4,200	
Stock(1.1.2005)	6,800	
Machinery	25,000	
Furniture	9,000	
Salaries	20,000	
General Expenses	4,000	
Travelling Expenses	1,400	
Drawings	5,000	
Capital		50,000
Total	**1,80,600**	**1,80,600**

Adjustment:

a) Closing Stock (31-12-2005) Rs.8,000/-.
b) Provide depreciation @ 5% on Machinery and @ 15% on Furniture.
c) Outstanding salaries Rs.100/-.

7. A choice is to be made between two competing proposals which require an equal investment of Rs.5,00,000 and are expected the following cash inflows of each project. Select the project under payback period method.

Year	Project-I (Rs.)	Project-II (Rs.)
1	2,50,000	1,00,000
2	1,50,000	1,20,000
3	1,00,000	1,80,000
4	Nil	1,50,000
5	1,20,000	80,000
6	60,000	40,000

8. Explain the features Tally accounting package.

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

MANAGEMENT SCIENCE

[Electronics and Communication Engineering, Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Compare and contrast Taylor's Scientific Management with Fayol's General Management.

2. a) Differentiate between Line Organization and Functional Organization.
b) What is Departmentation? Explain the departmentation by product stating its advantages.

3. a) Explain the characteristics of batch-order production system.
b) Explain the various steps involved in method study by taking an example.

4. Ram industry needs 5400 units/year of a bought out component which will be used in its main product. The ordering cost is Rs.250 per order and the carrying cost per unit per year is Rs.30.
Find i) Economic order quantity.
ii) No. of orders per year.
iii) Time between successive orders.

5. What are the major findings of Hawthorne experiments? Explain their significance to the practicing manager.

6. Consider the following table summarizing the details of a project involving 11 activities.

Activity	Predecessor(s)	Duration (weeks)		
		a	*m*	*b*
A	–	6	7	8
B	–	1	2	9
C	–	1	4	7
D	A	1	2	3
E	A, B	1	2	9
F	C	1	5	9
G	C	2	2	8
H	E, F	4	4	4
I	E, F	4	4	10
J	D, H	2	5	14
K	I, G	2	2	8

a) Construct the project network.
b) Find the expected duration and variance of each activity.
c) Find the critical path and the expected project completion time.
d) What is the probability of completing the project on or before 25^{th} week?

7. Discuss the role of entrepreneurship in economic development.

8. What is total quality management? Discuss Taguchi's philosophy for quality improvement.

CODE No.:10BT40503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

PRINCIPLES OF PROGRAMMING LANGUAGES

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss in detail about the various categories of languages.
b) Explain about Syntax and Semantics of programming language.

2. a) Explain the characteristics of sub program.
b) What is meant by short circuit evaluation? Explain.

3. a) How *pass by value*-result is distinguished from *pass by reference*? Give an example to show these parameter passing mechanisms.
b) What is meant by aliases in C++? Explain with an example how to use aliases.

4. a) What are the conceptual models of transfer, the advantages and the disadvantages of pass-by-value, pass-by-result, pass-by-reference and pass-by-name parameter passing methods?
b) Present one argument against providing both static and dynamic local variables in subprograms.

5. a) What are data abstraction and encapsulation with suitable examples?
b) Explain object oriented programming feature in SmallTalk, C++ and Java.

6. a) What is an exception? Discuss the exception handling in Java and C++**.**
b) Describe the features of logic programming and its applications.

7. a) Explain arrays, records, set and user defined data types. Considering a convenient programming language, explain how can you define and use them.
b) Explain the concept of compilation and virtual machines.

8. a) What are the rules followed to declare variables in Python, PERL and PHP?
b) Explain in detail about separate compilation and module library.

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

LINEAR AND DIGITAL IC APPLICATIONS

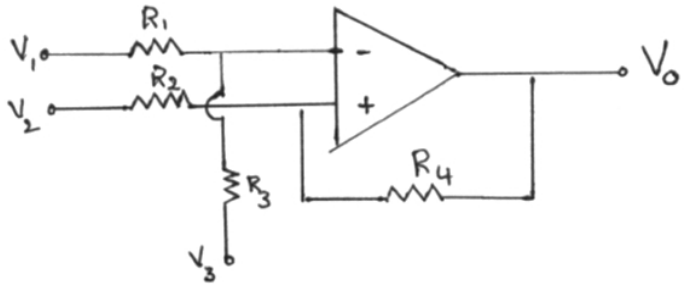
[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the basic block diagram of a general op-amp and explain the operation of each block.
b) List ideal characteristics of an op-amp and compare with that of a practical op-amp such as 741.

2. a) Draw the circuit of a voltage to current converter if the load is (i) floating and (ii) Grounded. Are there any limitations as the size of the load when grounded?
b) In the below circuit, it can be shown that $\mathbf{V_0=\alpha_1 V_1+\alpha_2 V_2+\alpha_3 V_3}$.Find the values of $\boldsymbol{\alpha_1, \alpha_2, \alpha_3}$. Also find the value of $\mathbf{V_0}$ if (i) $\mathbf{R_4}$ is Short circuited (ii) $\mathbf{R_4}$ is removed (iii) $\mathbf{R_1}$ is short circuited.



3. a) What is Phase Locked Loop? List the basic building blocks of the discrete PLL. What is the major difference between digital and analog PLLs?
b) List the applications of PLL. Explain each.

4. a) Draw the circuit diagram and explain the operation of CMOS logic, AND-OR-INVERT and OR-AND-INVERT.
b) Explain the concept of CMOS steady state electrical behavior.

5. a) Write short notes on TTL, ECL and CMOS digital logic families.
b) Explain the interfacing of a TTL gate driving CMOS gates and vice versa.

6. a) Describe the needs of libraries in VHDL.
b) Develop a VHDL program for a 4-bit parallel binary subtractor using structural approach.

7. a) Draw the logic diagram for a 16 to 4 encoder using just four 8 input NAND gates. What are the active levels of the input and outputs in your design?
b) Write a VHDL program for a device with the functionality of a 74**x**185.

8. a) Distinguish between latch and flip-flop. Show the logic diagram for both. Explain the operation with the help of function table.
b) Write VHDL dataflow program for the Shift Register.

CODE No.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

PRINCIPLES OF COMMUNICATIONS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Determine the Fourier transform of a pulse centered at zero; with width τ.
Sketch the spectrum of the signal when $\tau << T$ where T is the time period.
b) Define the cross correlation and auto correlation of property of a signal.

2. a) Derive the expression for AM wave and draw its spectrum.
b) Explain the generation of DSB-SC signal using balanced modulator with a diagram.

3. a) With the help of block diagram, explain generation of FM wave using Armstrong method.
b) Draw the spectrum of WBFM and explain the effect of modulation index on the spectrum.

4. a) Explain the generation and detection of PPM signal.
b) What is aliasing and how it is reduced?

5. a) With suitable block diagram, explain the principle of operation of a PCM system.
b) Explain the generation of Delta modulation signal.

6. a) Give the comparison of M-ary digital modulation schemes.
b) Explain the power spectra of binary PSK and FSK signals along with graphs.

7. a) List out the implications of Shannon-Hartley theorem and explain them with suitable examples, if any.
b) Apply the Huffman coding procedure for the following message ensemble to find the code word:

Signal	X_1	X_2	X_3	X_4	X_5	X_6	X_7
Probability	0.5	0.2	0.1	0.05	0.05	0.05	0.05

8. a) Explain the linear Block Codes.
b) The generator matrix for a (6, 3) block code is given below. Find all the code vectors of this code.

$$G = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 1 \\ 0 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix}$$

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

DESIGN AND ANALYSIS OF ALGORITHMS

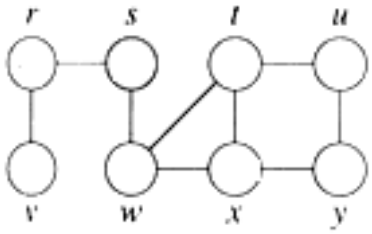
[Information Technology]

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

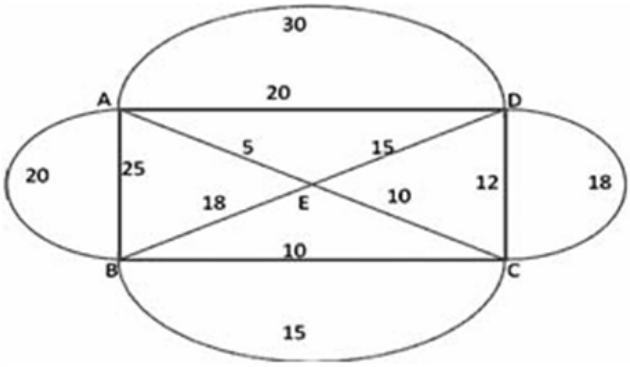
Answer any FIVE questions
All questions carry equal marks

1. a) Write the code for Quick Sort. Explain the working with an example.
b) Distinguish between Big Oh and Big Omega notation.

2. a) Explain weighing rule for UNION and its complexity.
b) Consider the following Graph to implement the BFS.



3. a) Short Note on: Graph Coloring Algorithm.
b) Apply Traveling Salesman Problem to the graph given below.



4. a) Write an algorithm to solve Job sequencing with dead lines.
b) What is the knapsack problem? Find an optimal solution to the knapsack problem with n=3, m=20, (p1,p2,p3)=(25,24,15) and (w1,w2,w3)=(18,15,10).

5. a) Explain Principle of optimality and how it is working in different problems which can be solved by dynamic programming technique.
b) Explain how to solve String editing problem using Dynamic programming technique.

6. a) Explain how the efficiency of Backtracking is estimated.
b) Write and explain Backtracking algorithm that finds all Hamiltonian cycles in a Graph.

7. What is the theory over the use of Backtracking Methodology? Why do you think using Backtracking Methodology improves the efficiency of an algorithm? Write a program which can best explain the concept of Backtracking Methodology.

8. a) What are NP-Complete problems? Explain the importance of NP-Complete problems with example.
b) Write a non-deterministic algorithm to find whether a given graph contains a Hamiltonian cycle.

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CODE No.:10BT51202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

COMPUTER GRAPHICS

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss briefly the advantages and disadvantages of a three-dimensional monitor using a varifocal mirror with a stereoscopic system.
b) List some applications appropriate for each of the following display technologies: Raster-Scan systems, Random Scan systems.

2. a) Briefly explain the steps involved in scan-line algorithm for polygon filling.
b) What are the merits and demerits of flood-fill and scan-line algorithms?

3. a) Write routines for reflection and shear two dimensional transformations.
b) Write a short note on two-dimensional affine transformation. Give examples.

4. a) Implement the Cohen-Sutherland line-clipping algorithm.
b) Explain the steps in two-dimensional viewing transformation pipeline.

5. a) Determine the Bezier Blending functions for five control points. Plot each function and label the maximum and minimum values.
b) Discuss about combined 3D Transformations.

6. a) Explain various coordinate systems in 3D viewing.
b) Describe 3-D rotation about x, y and z axes and write the corresponding transformation matrices.

7. a) Write the steps of depth-buffer algorithm to detect visible surfaces.
b) Develop a routine to implement the scan-line algorithm for displaying the visible surfaces.

8. a) List out and explain methods of controlling animation.
b) How would you create a Weiman-style translation algorithm? Suppose a pixmap has alternating columns of black and white pixels. What are the results of translating this pixmap by ½ pixel? What is the result of applying Weiman's scaling algorithm to stretch this image by a factor of 2? What do you think of these results?

CODE No.:10BT60101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

ESTIMATION AND QUANTITY SURVEYING

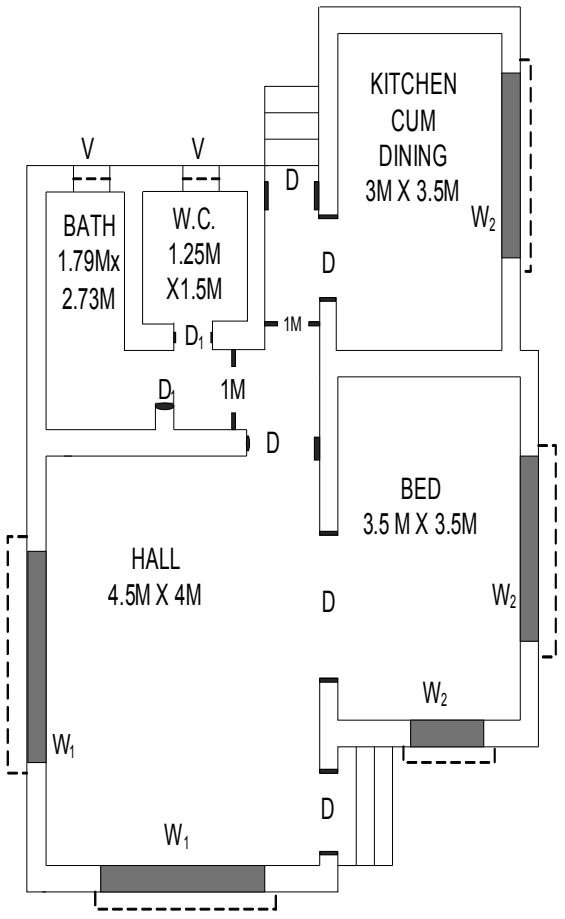
[Civil Engineering]

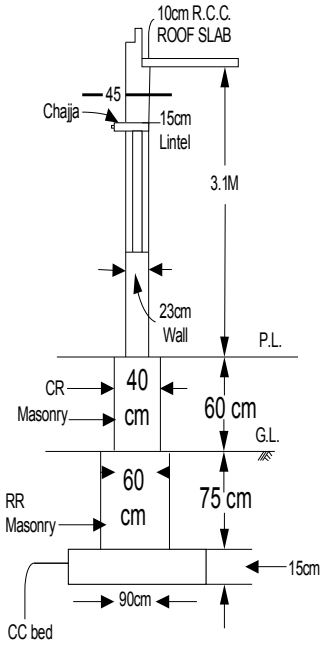
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain various types of approximate methods of estimation.
b) The plinth area of an apartment is 500 sq.m. Determine the total cost of building from the following data:
Rate of construction = Rs 12,300/- per cu.m.
The height of apartment = 16.25 m.
Water supply, Sanitary and Electrical installations each at 6% of building cost.
Architectural appearance @ 1% of building cost.
Unforeseen items @ 2% of Building cost.
P.S and contingencies @ 4% of building cost.

2. Estimate the quantities of the following items of a two roomed building from the given plan and section as shown in figure.
a) Earth work in excavation for foundation.
b) Brick work in foundation
c) Earth filling





Schedule
Doors:
D = 1.2M x 2.1M
D_1 = 0.9M x 2.1M

WINDOWS
W_1 = 2.0M x 1.5M
W_2 = 1.5M x 1.5M
V = 1.0M x 0.6M

3. Reduced level of ground along the centreline of a proposed road from chainage 10 to chainage 20 are given below. The formation level at the 10th chainage is 107 and the road is in downward gradient of 1 in 150 upto the chainage 14 and then the gradient changes to 1 in 100 downward. Formation width of road is 10 m and side slopes of banking are 2:1 (H:V). Length of chain is 30 m. Prepare an estimate for the quantity of earthwork for the proposed road.

Chainage	10	11	12	13	14	15	16	17	18	19	20
RL	105.0	105.6	105.44	105.9	105.42	104.3	105.0	104.1	104.62	104.0	103.3

4. a) Calculate rate analysis for 12 mm cement plastering in ceiling (1:3) with coarse sand.
b) "The analysis of rate is usually worked out for the unit of payment of a particular item of work under two heads". What are they? Discuss.

5. Draw reinforcement details along with curtailment lengths in the following slabs:
a) Simply supported.
b) Continuous over several spans.

6. Explain the following briefly
a) Lump sum contract
b) Tender notice
c) Earnest money deposit and security deposit
d) Measurement book form No. 23.

7. a) Explain the concept of Depreciation and methods of Depreciation.
b) A property is let out a monthly rent of Rs. 1,500/- . If the out goings is taken at 30% of gross annual rent, and if the owner of the property expects a return of 12%, what is the capitalized value of the property?

8. a) Write the differences between detailed and general specifications.
b) Write the general specification of cement concrete **(1:1 ½: 3).**

CODE No.:10BT60102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

STEEL STRUCTURES - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the stress-strain curve for mid steel and also explain the salient features.
b) Explain the various serviceability limit states.

2. Determine the design strength and efficiency of a lap joint connecting two plates 250 mm × 8 mm with the bolt holes as shown in Fig.1 Adopt the pitch of 60 mm and gauge distance of 40 mm. Assume the yield strength and the ultimate strength of the material are 250 MPa and 415 MPa respectively.

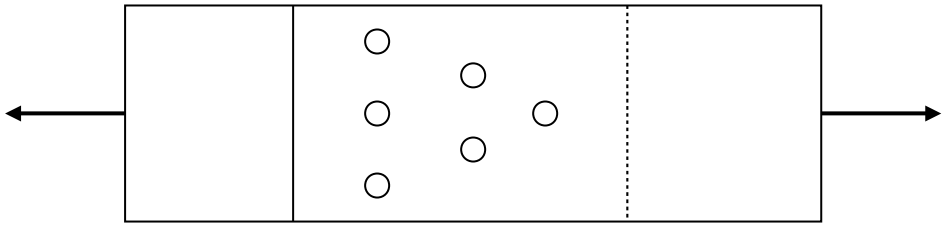


Fig. 1

3. a) Explain the advantages and disadvantages of welded connections.
b) Design the welded connection of a tie member, consisting of two ISA 90×90×10 subjected to a factored load of 350 kN. The angles are to be connected to either side of a 12 mm thick gusset plate.

4. Design a single angle to carry tension of 120 kN. Thickness of gusset plate can be considered as 12 mm.

5. A simply supported beam of span 10 m has to carry a uniformly distributed load of 60 kN/m inclusive of self weight. Design a suitable section of the beam when the compression flange is laterally unsupported.

6. A column 4.6 m long held effectively at both ends and restrained in direction at one end has to support a factored load of 3200 kN. Design the column using standard ISHB sections and plates.

7. Design a laced column with two channels placed toe-to-toe, subjected to a factored load of 1500 kN. The effective length of the column is 6 m.

8. Design a gusset base for a column of ISHB 350 subjected to factored load of 1800 kN. Assume M20 grade concrete pedestal.

CODE No.:10BT60103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

WATER RESOURCES ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write an essay on the scope of irrigation engineering as practiced in India.
b) Discuss different methods of increasing soil fertility and their suitability.

2. a) What is consumptive use of water? Describe any two methods for determining the consumptive use of water.
b) Compute the depth and frequency of Irrigation required for a certain crop with data given below: Root zone depth = 100cm; wilting point = 12%; Field capacity = 22%; consumptive use = 25 mm/day; Apparent specific gravity of soil = 1.5;Efficiency of Irrigation = 50%. Assume 50% depletion on available moisture before application of irrigation water at field capacity.

3. a) Explain silt excluder and silt ejector with neat sketches.
b) Explain the use of Khosla's formulae for computing key point pressures and exit gradient.

4. a) 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) Give a practical profile of a low gravity dam.
b) Following data were obtained from the stability analysis of a concrete gravity dam.
i) Total resisting moment about toe = 14.715×10^5kN-m
ii) Total overturning moment about toe = 9.81×10^5 kN-m
iii) Total vertical force above the base = 49.05×10^3 kN
iv) Base width of the dam = 50m
v) Slope of the downstream face of the dam = 0.7H:IV
Calculate the maximum and minimum vertical stress to which the foundation will be subjected to. What is the maximum principal stress at toe? Assume there is no tail water.

6. a) Define earth dam and explain its classification.
b) What are the criteria for safe design of earth dams?

7. a) What is meant by falls? Where are they located?
b) What are the functions of head regulators and cross regulators?

8. a) Write a note on selection of suitable type of cross drainage works.
b) What do you understand by level crossing?

CODE No.:10BT60104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

ENVIRONMENTAL ENGINEERING - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the necessity of public water supply scheme. With your knowledge on the existing schemes, explain the challenges faced in planning water supply schemes.
b) What do you mean by design period? Explain the factors influencing design period of water supply schemes.

2. a) What is fire demand? Explain the variation in water consumption of a town.
b) The population of a city obtained from census report is as given below

Census years	1921	1931	1941	1951	1961	1971	1981	1991	2001
Population	18000	21500	25400	27800	34700	41500	47350	54600	61700

Estimate the population of the city for the year 2021 by Arithmetical and geometrical methods.

3. a) Derive an expression for the discharge correction factor while analyzing the pipe networks using Hardy-cross method.
b) Describe various distribution layouts in a water distribution network. Explain the merits and demerits of each layout.

4. a) What objections could be there if
i) Turbidity ii) Alkalinity and iii) Hardness are present excess in water?
State BIS Permissible limits of these for drinking water.
b) Explain different diseases normally occur with polluted water supply.

5. a) What is the significance of aeration? Explain the methods of aeration commonly used in the treatment of water.
b) Compute the dimensions of a continuous flow rectangular setting tank for a population of 20000 persons with a daily per capita water allowance of 120liters. Assume detention period to be 6 hours.

6. a) Explain the working of rapid sand filter and back wash system with help of a sketch.
b) Describe the various methods of disinfection and explain why chlorination is the most popular one in drinking water treatment.

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. Write note on : i) Layout of water supply in single storey building

ii) Detection and prevention of leakage.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

TRANSPORTATION ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Giving the sketches of various road network patterns available, briefly discuss the conditions for which each of them is suitable.
b) What are the requirements of good highway alignment? Explain.

2. a) Derive an expression for finding the stopping sight distance at level and at grades.
b) A valley curve is formed by a descending grade of 1 in 25 meeting an ascending grade of 1 in 30. Design the length of valley curve to fulfil both comfort condition and head light sight distance requirements for a design speed of 80 kmph. Assume allowable rate of change of centrifugal acceleration **C=0.6m/sec^3**, **f = 0.35** and **t = 2.5 sec**.

3. a) List various tests to be done on bitumen used for construction. Explain any one in detail.
b) Write notes on Los Angeles Abrasion test performed on aggregates, also discuss desirable properties of cement.

4. a) Differentiate between Flexible and Rigid Pavements.
b) Explain the Group Index Method of Flexible Pavement Design. What are the limitations of this method?

5. a) How water table can be lowered in sub surface drainage? Explain.
b) What are the problems related to road construction in water logged areas and what precautions are to be taken?

6. a) Explain the different types of rails with the help of a sketch and also compare them.
b) What are the effects of creep? How can you prevent creep?
c) List the requirements of an ideal sleeper.

7. a) Explain the different classifications of gradients in railway.
b) With neat sketch explain the function of permanent way components of BG track on embankment.

8. Write short notes on the following:
a) Aircraft weight
b) Wind Rose Diagram
c) Runway numbering

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

FOUNDATION ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the types of soil samples? Why are they required? Describe any one method for obtaining the samples.
b) What are the field tests used to assess in site soil properties? Describe in detail static lone penetration test and its interpretation.

2. a) What are the various types of earth pressures? Give field example for each type.
b) A retaining wall with a smooth vertical back has to retain a backfill of cohesionless soil up to height of 5m above G.L. The soil has a void ratio of 0.83 and the specific gravity of soil solids is 2.68. The water table is located at a depth of 2m below the top of the backfill. The soil above the water table is 20% saturated. The angle of internal friction of the soil above and below water table is found to be 32^0 and 28^0 respectively. Plot the active earth pressure distribution diagram and determine the magnitude and point of application of the resultant thrust.

3. a) What are the design criteria to be satisfied for the stability of a gravity retaining wall? Indicate briefly how you will ensure the same.
b) An anchored bulkhead of total height 10 m is constructed in a cohesionless soil. The ground surface on the back of the bulkhead is horizontal and is level with the top of the bulkhead. The dredge line is at 7.0 m below the top. The free water level is at a height of 5 m above the dredge line. Horizontal anchor rods are provided at a depth of 1 m below the top. The saturated unit weight of sand is 20 kN/m^3 and the dry unit weight is 16 kN/m^3. The angle of shearing resistance of the soil is 30^0. Determine the factor of safety and the pull in the anchor rod per unit length of bulkhead by the free earth support method.

4. a) What are the types of failovers of finite slopes? Discuss in detail the conditions under which each type of failure is expected.
b) A cutting is to be made in a clay for which c = 35 kPa and $\phi = 0°$. The density of the soil is 20 kN/m^3. Find the maximum depth for a cutting of side slope 1 ½ to 1, if the factor of safety is to be 1.5, stability number = 0.17.

5. a) What are the modes of shear failure of a shallow foundation? Explain the characteristics of each type of shear failure with the help of neat sketches giving the favorable soil conditions under which each type of shear failure may occur.
b) The construction of a strip footing is undertaken during a summer period and the water table is observed at 2.5 m from the ground surface. During the monsoon the water table rises to the ground surface. The relevant soil properties are γ=19.2 kN/m^3, $\phi = 32°$ and C=0. Determine the gross safe bearing capacity in both the cases for a factor of safety of 2.5, Bearing capacity factors are $N_q = 23.2$ and $N_\gamma = 30.2$.

6. a) What is the significance of permissible settlement? State the permissible settlements

for Isolated and raft foundations in clay and Sandy Soils.

b) Determine the allowable bearing capacity of a 1.5mX 1.5m square footing placed at a depth of 2.0m in a sandy deposit having a unit weight of 19kN/m^3 with observed SPT value of 37. Water table is at depth of 1.5m. Determine the allowable bearing capacity for 50mm permissible settlement after applying suitable corrections for SPT value.

7. a) A cast in place concrete pile in medium sand is 0.5m in diameter and 10m long. The water table is 2m below the top of pile. Properties of the sand are C = 0, $\phi = 38°$, $\gamma_{sat} = 19.5$ kN/m^3 and $\gamma = 18.0$ kN/m^3. Determine the ultimate load for the pile. Let $N_q = 60$ and K tan $\delta = 0.5$.

b) Write a short notes on settlement of pile groups.

8. a) What is a caisson? How caissons are classified based on the method of construction? What are the merits and demerits of each type of caisson?

b) Discuss the construction aspects of well foundations. What are Tilts and Shifts?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

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) "Torque in a shunt motor varies with the armature current" Justify?
b) A DC series motor drives a load, the torque of which varies as the square of the speed. The motor takes current of 30 amps, when the speed is 600 rpm. Determine the speed and current when the field winding is shunted by a diverter, the resistance of which is 1.5 times that of field winding. The losses may be neglected.

2. a) Give classification of various electric heating methods along with brief account of their working principle.
b) Discuss the method of temperature control of resistance ovens.

3. a) Explain about different types of resistance welding.
b) Write about equipment used for the electric welding.

4. a) What is an integrating sphere? Explain its use in illumination engineering.
b) A lamp of 500 candle power is placed at the centre of a room, 20m**x**10m**x**5m. Calculate the illumination in each corner of the floor and point in the middle of a 10m wall at a height of 2m floor.

5. a) What are the draw backs of discharge lamps and explain sodium vapor discharge lamp?
b) Explain about flood lightning.

6. a) What are the requirements to be satisfied by an ideal traction system?
b) Discuss relative merits of
i) 1500 volts D.C ii) 25 Kv
Single phase 50 Hz rectifier locomotive system for the main line electrification of railway in an industrial belt where a grid network exists.

7. a) Explain, what do you understand by speed-time curves. What is its use in practice?
b) An electric train has schedule speed of 25 km/h between stations 800 m apart. The duration of station stop is 20 seconds, the maximum speed is 20 percent higher than the average running speed and the breaking retardation is 3 km/h/s. Calculate the rate of acceleration required to operate this service.

8. a) Explain the energy audit procedure for electric motors.
b) Write short notes on smart meters and energy efficient motors.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

POWER SEMICONDUCTOR DRIVES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Derive the Speed, Torque Equations of a single phase semi controlled converter connected to separately excited D.C motor with continuous current operation with necessary waveforms.

2. a) A 3-phase fully controlled converter is feeding a DC series motor load. Derive the expressions for average output voltage, maximum average output voltage, normalized average output voltage and the **rms** value of the output voltage.
b) A 400 V, 750 rpm, 70A DC shunt motor has an armature resistance of 0.3 **Ω** when running under rated condition; the motor is to be braked by plugging with armature current limited to 90 A. What external resistance should be added in series with the armature? Calculate the initial braking torque and its value at a speed of 300 rpm.

3. a) Explain briefly the different methods of electric braking for dc motors.
b) Explain four-quadrant operation of dc motors by 1- Ø dual converters in detail with circulating current mode of operation.

4. a) With the help of neat circuit diagram and waveforms explain the operation of single-quadrant, chopper fed DC separately excited motor for continuous current operation.
b) A 230 V, 960 rpm and 200A respectively excited dc motor has an armature resistance of 0.02**Ω**. The motor is fed from a chopper which provides both motoring and breaking operations. The source has a Voltage of 230V. Assuming continuous Conduction
i) Calculate duty ratio of chopper for motoring operation at rated torque & 350 rpm.
ii) Calculate duty ratio of chopper for breaking operation at rated torque & 350 rpm.

5. a) Explain the operation voltage source inverter fed Induction motor drive operated in PWM inverter mode.
b) With the help of power circuit and waveforms explain the operation of half wave cyclo converter fed induction motor drive.

6. a) With the help of block diagram explain the closed loop control of Static Scherbius drive.
b) Explain the operation of Static Kramer drive.

7. a) Discuss the VSI method of speed control of synchronous motor. Describe the operation of the converter with waveforms.
b) Write short notes on load commutated CSI fed synchronous motor.

8. Explain the following in detail
a) Photovoltaic panels.
b) Solar powered pump drives.
c) Solar powered Electrical vehicles and boats.

CODE No.:10BT60301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC10) Regular Examinations June - 2014

OPERATIONS RESEARCH

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Use Simplex method to solve the following LP problem.
Maximise: $Z= 3x +4y + z$ subject to the following constrains
$x+2y+3z \leq 90$; $2x+ y+ z \leq 60$; $3x+y +2z \leq 80$ and $x, y, z \geq 0$

2. a) Distinguish between Transportation and Assignment models.
b) Solve the following transportation problem to maximize profit. Cell entries are profits in Rs/unit. Supply and Demand are in units.

	Destination				
Source	1	2	3	4	Supply
A	40	25	22	33	200
B	44	35	30	30	60
C	38	38	28	30	40
Demand	80	40	120	60	

3. For the following data, draw the network diagram, and then crash the activities to find the time-cost trade-off points that the company should want to consider. Start with the plan that has the longest duration.

Activity	**Preceding Activity**	**Time (weeks)**		**Cost (Rs)**	
		Normal Program	**Crash Program**	**Normal Program**	**Crash Program**
A	-	2	1	20,000	20,700
B	-	3	1	29,000	33,000
C	A	2	1	25,000	26,100
D	B	4	3	47,000	47,750
E	C	4	2	55,000	57,000
F	C	3	2	29,000	29,500
G	D, E	5	3	79,000	80,800
H	F, G	2	1	15,000	17,900

4. A large hospital complex has several operation theatres. Each operation table has a special light bulb attachments. The bulb is pone to failure. There are 200 bulbs installed in all. Considering 500 hours as period, the failure of similar bulb has been as under:
Out of 100 bulbs;
9 failed by the end of first period
20 failed by the end of second period
33 failed by the end of third period
61 failed by the end of fourth period
77 failed by the end of fifth period
90 failed by the end of sixth period
100 failed by the end of seventh period
The management considers to make it a practice to replace all in a group at one time, then replace the individual bulb as and when it fails and after fixed interval of time again replace entire group of 200 bulbs. If the bulbs are replaced in group it cost Rs. 5 per bulb and when replaced individually it cost Rs. 20 per bulb. What should be the replacement policy of the hospital?

5. Explain the process on making decisions under uncertainty using
a) Hurwicz criteria.
b) Laplace Criteria.

6. a) What are the advantages and disadvantages of having inventory?
b) Find the optimal ordering quantity for a product when the annual demand for the product is 500 units, the cost of storage per unit per year is 10% of the unit cost and ordering cost per order is Rs. 180. The unit costs are given below:

Quantity	Unit Cost
$0 \leq Q_1 \leq 500$	Rs. 25.00
$500 \leq Q_2 \leq 1500$	Rs. 24.80
$1500 \leq Q_3 \leq 3000$	Rs. 24.60
$3000 \leq Q_4$	Rs. 24.40

7. a) Derive an expression for economic order quantity with instantaneous replenishment, with constant consumption rate with shortages and find the equation for total cost of optimum inventory.
b) With the following data, compute minimum cost order quantity, total annual cost:

Annual requirement:	5200 units
Ordering cost:	Rs 9.00
Holding cost per unit per year:	Rs 0.03
Weekly production rate:	200 units
Weekly demand rate:	100 units
Unit production cost:	Rs 10.00

8. a) Explain the dominance properties.
b) Solve the following game by graphical method:

		Player B			
		I	II	III	IV
Player A	I	2	2	3	-2
	II	4	3	2	6

c) Solve the following game problem:

		Player B		
		B1	B2	B3
Player A	A1	-2	15	-2
	A2	-5	-6	-4
	A3	-5	20	-8

CODE No.:10BT60302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC10) Regular Examinations June - 2014

METROLOGY AND MEASUREMENTS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain clearly between shop, inspection and master gauges.
b) Describe briefly the manufacturing of slip gauges.
c) Enumerate the advantages of using wave length standard as basic unit to define primary standards.

2. a) State and explain the Taylor's Principles of Gauge Design.
b) For each of the following hole and shaft assembly, find the shaft-tolerance, hole tolerance and state the type of fit.

$$(i)\,Hole: \begin{matrix} +\,0.025 \\ 50\,+\,0.00\ mm \end{matrix} \qquad shaft: \begin{matrix} +\,0.05 \\ 50\,+\,0.005\ mm \end{matrix}$$

$$(ii)\,Hole: \begin{matrix} +\,0.05 \\ 30\,+\,0.00\ mm \end{matrix} \qquad shaft: \begin{matrix} -\,0.02 \\ 30\,+\,0.05\ mm \end{matrix}$$

3. a) What is a comparator? Classify different types of comparators. Describe Mechanical comparator and clearly explain the magnification method adopted in it.
b) Describe the measuring principle and working of sine bar.

4. a) Describe about three wire method for measuring the effective diameter of various screw threads.
b) Describe a pitch measuring machine.

5. a) With the help of block diagram, explain the functional elements of generalized measurement system.
b) Explain various dynamic characteristics of Measurement Systems.

6. a) With the help of a diagram explain the working of Hydraulic dynamometer.
b) Explain the working principle of Bourdon tube pressure gauge by mentioning the advantages and limitations.

7. a) Explain Seebeck, Peltier and Thomson effects related to thermocouple.
b) Explain the procedure to measure strain using strain gauges.

8. a) Define dynamic response of a system and distinguish between steady state response and dynamic response.
b) Derive the equations for time response of a first order system subjected to ramp input.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC10) Regular Examinations June - 2014

HEAT TRANSFER

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Derive general conduction equation in Cartesian coordinates system.

2. a) What are the types of fins?
b) Consider a furnace wall (k = 1 W/m°C) of thickness 50cm is to be insulated with a material (k = 0.08 W/m°C). The temperature of inner and outer surface furnace wall are 1350°C and 50°C. For heat loss should not exceed 750W/m², what should be the thickness of insulation.

3. a) What is semi-infinite medium? Give examples of solid bodies those can be treated as semi-infinite mediums for heat transfer purposes.
b) An aluminum sphere weighing 5.5 kg and initially at a temperature of 290°C is suddenly immersed in a fluid at 15°C. The convective heat transfer coefficient is 58 W/m² K. Estimate the time required to cool the aluminum to 95°C, using lumped capacity method of analysis.

4. a) Define hydrodynamic and thermal entry length.
b) Find the condition of flow, if oil at mean temperature of 40°C flows in a pipe of 3cm diameter, 50m long with 1m/s speed.

5. a) Define Laminar and Turbulent flows.
b) Air at 20°C and atmospheric pressure flows at a velocity of 4.5 m/s past a flat plate with a sharp leading edge. The entire plate surface is maintained at a temperature of 60°C. Assuming that the transition occurs at a critical Reynolds number of $5x10^5$, find the distance from the leading edge at which the boundary layer changes from laminar to turbulent. At the location, calculate the followings:
i) thickness of hydrodynamic boundary layer ii) thickness of thermal boundary layer
iii) local and average convective heat transfer coefficients
iv) heat transfer rates from both sides per unit width of the plate
v) mass entrainment in the boundary layer vi) skin friction coefficient.

6. a) What are regimes of boiling and explain them with diagram.
b) Steam at 0.2 bar condenses on the outer surface of a 0.75m long, 50cm outer diameter horizontal tube maintained at a uniform temperature 40°C. Calculate condensation rate and heat transfer.

7. a) Sketch the temperature variations in parallel flow and counter flow heat exchangers.
b) A counter flow concentric tube heat exchanger is used to cool engine oil (C=2130 kJ/kg-K) from 160°C to 60°C with water available at 25°C as the cooling medium. The flow rate of cooling water through the inner tube of 0.5 m diameter is 2 kg/s while the flow rate of oil through the outer annulus O.D= 0.7 m is 2.5 kg/s. If the value of the overall heat transfer coefficient is 250 w/m²-K, how long must be the heat exchanger be to meet its cooling requirement?

8. a) Distinguish between Black body and Gray body.
b) A steel tube, 5 cm outside diameter and 2 m long, is at 500K temperature. The tube is located centrally in i) a large brick room having wall temperature of 300K and ii) a square brick conduit of 20 cm side and at 300K. If the emissivities of steel and brick are 0.8 and 0.95 respectively. Make calculations for the rate of heat loss by radiation from the tube in each case.

CODE No.:10BT60304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC10) Regular Examinations June - 2014

CAD/CAM

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the various types of CAD / CAM systems?
b) Describe the various stages in the design process and discuss how CAD / CAM accelerates the design process.

2. a) Classify various types of drafting commands and discuss about display control commands.
b) Reflect the polygon whose vertices are A(-1, 0), B(0,-2), C (1, 0) and D (0,2) about the (i) horizontal line y =2 and (ii) vertical line x =3.

3. a) What are the limitations of wireframe modeling? Explain with examples.
b) Write the properties of a Bezier Surface.

4. a) Briefly discuss about the coordinate systems in NC system.
b) Discuss the principal functions of Direct Numerical Control Systems.

5. a) What are the advantages of G.T?
b) Explain the importance of each digit in an OPITZ coding system.

6. a) Explain the Scanning Laser system used for computer aided quality control. What are the various methods of automated inspection? Explain.
b) With neat diagram explain the working principle of CMM.

7. a) What is meant by Capacity Planning? Mention its advantages and limitations.
b) Define CIM and discuss about the advantages of CIM in a manufacturing scenario.

8. a) Explain the method of part inspection using (CMM) coordinate measuring machine.
b) Describe with a neat sketch the working principle of machine vision or scanning laser beam devices.

CODE No.:10BT60305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC10) Regular Examinations June - 2014

DESIGN OF MACHINE ELEMENTS-II

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A vertical two start square threaded screw of a 100 mm mean diameter and 20 mm pitch supports a vertical load of 18 kN. The axial thrust on the screw is taken by a collar bearing of 250 mm outside diameter and 100 mm inside diameter. Find the force required at the end of a lever which is 400 mm long in order to lift and lower the load. The coefficient of friction for the vertical screw and nut is 0.15 and that for collar bearing is 0.20.

2. A bar is raised and lowered by two 38mm square threads having a pitch of 7 mm. Determine the force required at a radius of 80mm to raise or lower a 11000N cross bar of a planer. The screw and nut materials are steel bronze respectively. The collar materials are steel and bronze respectively. The collar material is steel; it has an outside diameter of 76mm and an inside diameter of 38mm; coefficients of friction at threads and at collar are 0.11 and 0.13 respectively.

3. A rope drive is to transmit 260kW from a pulley 1.2m diameter running at a speed of 300 rpm. The angle of lap may be taken as a π radians. The groove half angle is **22½°**. The ropes to be used are 50mm in diameter. The weight of the rope is 1.3kg per meter length and each rope has a safe maximum pull of 2200N. The coefficient of friction between rope and pulley is 0.3.

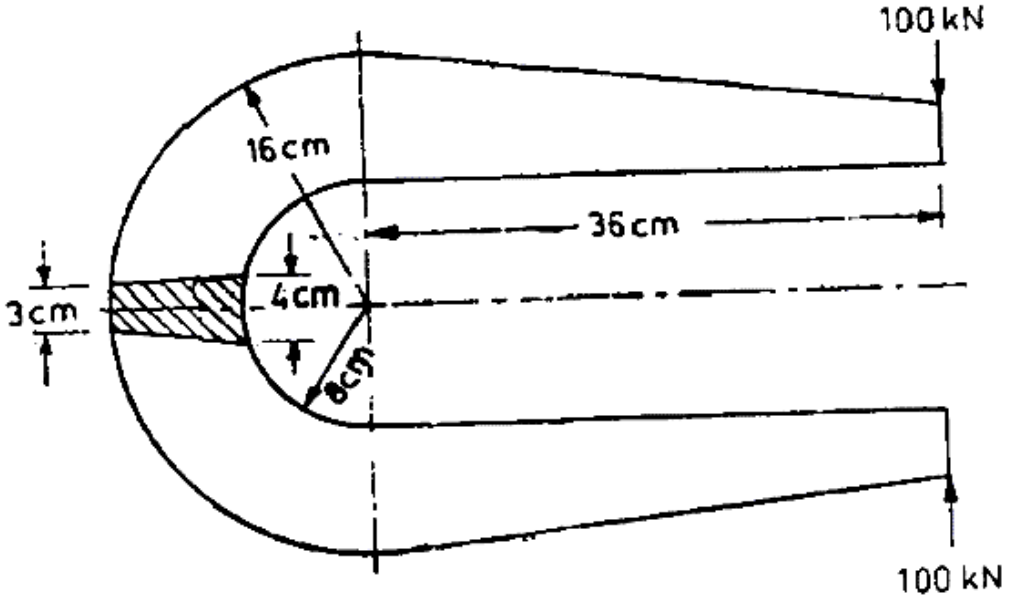
4. Following data is given for a 360^0 hydrodynamic bearing:
Radial load = 2kN;
Journal diameter = 50 mm
Bearing length = 50mm
Viscosity of oil = 20 m Pa s
Specify radial clearance that need be provide so that when the journal is rotating at 2800 rpm, the minimum film thickness is 30 microns. Evaluate the corresponding coefficient of friction.

5. a) What is meant by hydrodynamic lubrication?
b) Design a journal bearing for a centrifugal pump running at 1440 rpm. The diameter of the journal is 100 mm and load on each bearing is 20 kN. The factor *ZN/p* may be taken as 28 for centrifugal pump bearings. The bearing is running at 75°C temperature and the atmosphere temperature is 30°C. The energy dissipation coefficient is 875 W/m^2/°C. Take diametral clearance as 0.1 mm.

6. A four stroke internal combustion engine has the following specifications:
Brake power = 7.5 kW; Speed = 1000 rpm.; Indicated mean effective pressure = 0.35 N/mm^2; Maximum gas pressure = 3.5 N/mm^2; Mechanical efficiency = 80 %.
Determine:
i) The dimensions of the cylinder, if the length of stroke is 1.4 times the bore of the cylinder;
ii) Wall thickness of the cylinder, if the hoop stress is 35 MPa;
iii) Thickness of the cylinder head and the size of studs when the permissible stresses for the cylinder head and stud materials are 45 MPa and 65 MPa respectively.

7. A helical spring *B* is placed inside the coils of a second helical spring *A*, having the same number of coils and free length. The springs are made of the same material. The composite spring is compressed by an axial load of 2300 N which is shared between them. The mean diameters of the spring *A* and *B* are 100 mm and 70 mm respectively and wire diameters are 13 mm and 8 mm respectively. Find the load taken and the maximum stress in each spring.

8. Determine the maximum stress in the frame of the 100 kN punch press as shown in the figure .



CODE No.:10BT60306

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular Examinations June - 2014

AUTOMOBILE ENGINEERING

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the essential requirements to be satisfied by material for the automobile engine components?
b) Explain the load on the chassis frame and axles.

2. a) With a simple diagram, explain the 'multi port fuel injection (MPFI)' system used in modern automotive engines. What are the advantages of MPFI engines?
b) What is 'fuel injection timing' of a diesel engine? What is the importance of optimum injection-timing? Explain briefly.

3. a) Why the liquid-cooling is preferred over air-cooling for automotive engines? Explain.
b) With a neat circuit, describe the working principle of battery-ignition system of a six-cylinder spark ignition engine.

4. a) What are various pollutants produced from SI engine exhaust? Explain briefly the control methods.
b) Explain multi-point injection system of a typical SI Engine.

5. a) Using simple diagram discuss the construction and working of following accessories i)Horn ii)Wiper
b) Why it is necessary to aim the Head lights correctly and write the procedure to adjust?

6. a) Explain the gear selector and gear shifting mechanism.
b) List out the advantages of automatic transmission over conventional transmission system.

7. a) What are the components of a steering system? Explain the functions of each component.
b) Briefly explain the following:
i) Steering gear ratio ii) Kingpin angle iii) Caster angle

8. a) Describe a typical suspension system. What are the different suspension systems in practice?
b) Explain the working of vacuum brake system.

CODE No.:10BT60401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

DIGITAL SIGNAL PROCESSING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define symmetric & anti symmetric signals with example.
b) What are the classification of discrete time systems?

2. a) Determine the 8-point DFT of the sequence x(n)={1,1,1,1,1,1,0,0}.
b) What is the relationship between Fourier series coefficients of a periodic sequence and DFT?

3. Draw the butterfly diagram for 16-point FFT calculation and briefly explain using decimation in time.

4. Determine direct forms I and II for the second order filter given by

$$y(n) = 2b\cos\omega_o y(n-1) - b^2 y(n-2) + x(n) - b\cos\omega_o x(n-1)$$

5. a) Design IIR filter using impulse invariance technique. Given that

$$H(s) = \frac{1}{s^2 + 5s + 6}$$ and implement the resulting digital filter by adder, multipliers and delays. Assume sampling period **T** = 1 sec.
b) Distinguish between FIR and IIR Filters.

6. a) Explain the procedure for designing FIR filter using windows.
b) What are the disadvantages of Fourier series method?

7. a) Explain decimation of sampling rate by an integer factor D and derive spectra for decimated signal.
b) Discuss on sampling rate conversion of rational factor I/D

8. Draw the block diagram of digital tape recorder system and explain. What are the advantages of digital recording system?

CODE No.:10BT60402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive an output SNR of a PCM receiver.
b) Discuss the advantages of Digital communications over Analog communications.

2. a) Explain the delta modulation system and mention its drawbacks.
b) Derive the SNR in a PCM system.

3. a) Give the comparison between the various digital modulation techniques for data transmission.
b) Explain power spectra of BPSK and BFSK.

4. a) Explain the performance of optimum matched filter receiver.
b) Discuss about the coherent detection of FSK.

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 Shannon Fano Coding with an example.
b) Consider an AWGN channel with bandwidth B=3KHz. Find the minimum value of S/N in db for reliable information transmission at R=2400, 4800 and 9600 bits/sec.

7. a) Explain the encoding of a message word using linear block codes with relevant expressions.
b) Design an encoder for (7,4) systematic cyclic code generated by $g(x) = 1 + x + x^3$.

8. a) Describe tree and trellis diagrams for decoding using Viterbi algorithm.
b) Explain various approaches of encoding in convolutional codes.

CODE No.:10BT60403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

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 wave equation for a TE wave and obtain all the field components in a rectangular waveguide.
b) Sketch the field patterns for TE and TM dominant modes in a rectangular waveguide.

2. a) An air filled circular waveguide has a radius of 5cms and is used as a resonator for TE_{111} mode at 8 GHz by placing two perfectly conducting plates at its two ends. Determine the minimum distance between the two plates.
b) What do you understand by Q-factor of a cavity resonator? Discuss the term unloaded Q, loaded Q, Critical coupled Q, under coupled Q and over coupled Q with respect to a cavity resonator.

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 output power at the through, coupled and isolated ports. Assume all ports to be matched.

4. a) Explain the symmetry property of S matrix.
b) Derive the S matrix of an ideal directional coupler.

5. a) What are the limitations of conventional tubes at microwave frequencies? Explain how these limitations can be overcome.
b) Draw a schematic of a 2 cavity klystron amplifier. With the help of an Applegate diagram, explain its working.

6. a) What are the slow wave structures?
b) Explain the operation of Travelling Wave Tube (TWT) with neat diagram. What is the function of attenuator in Travelling Wave Tube (TWT)?

7. a) Explain domain formation using relevant diagrams in Gunn diode.
b) Explain the construction and working of IMPATT diode.

8. a) Describe the method to measure low microwave power using Bolometric method.
b) Explain the method to measure low VSWR and reflection co-efficient.

CODE No.:10BT60404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

MICROPROCESSORS AND MICROCONTROLLERS

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

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

Answer any FIVE questions
All questions carry equal marks

1. Explain in detail about the architecture and different registers of 8085 Processor.

2. a) Explain in detail about 8086 memory banks and associated signals for byte and word operation.
b) List out the maskable and non maskable interrupts available in 8086.

3. a) Explain the instruction set of 8086.
b) Write an ALP to add two 8 bit numbers.

4. Describe 8255A PPI and interfacing with 8086 processor with neat diagrams.

5. a) Discuss about the methods of serial data transfer.
b) Write a Program for Initialization of 8251 and receiving serial data depending on your own assumptions.

6. Draw the block diagram of DMA controller and explain its operations.

7. Explain the architecture of 8051 microcontroller with a neat diagram.

8. a) Write 8051 ALP to read data from port1 when negative edge triggered at INT0 and Supply the data to Port2 by masking the upper 4 bits.
b) Explain the different serial communication modes in 8051.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

VLSI DESIGN (ELECTIVE-III)

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain step-by-step procedure for a typical n-well process with neat diagrams.
b) Explain the concepts of 'Lithography' and 'Probe testing' related to IC production Process.

2. a) Derive an equation for Transconductance of an ***n*** channel enhancement MOS- FET operating in active region.
b) A PMOS transistor is operated in triode region with the following parameters. **V_{GS}=- 4.5V, V_{tp}= -1V, V_{DS}=-2.2 V, (W/L) =95, $\mu_n C_{ox}$ =95μA/V ^{2}**. Find its drain current and drain source resistance.

3. a) Draw the stick diagram for NAND gate and give its procedural steps.
b) Discuss the limitations of scaling of MOS circuits.

4. a) What is meant by Switch Logic? Explain some switch logic arrangements.
b) What are the basic MOS circuit concepts? Explain the concept of sheet resistance applied to MOS Transistors and Inverters.

5. a) Draw and explain the structured design approach of a parity generator.
b) Present the design approach for a Carry Bypass Adder with neat diagram.

6. a) Explain semiconductor integrated circuit design approach using programmable logic arrays.
b) Compare the performance parameters of Complex Programmable Logic Devices and Field Programmable Gate Arrays.

7. a) Draw the block diagram of synthesis process and illustrate with an example.
b) Describe VHDL synthesis approach with an example.

8. a) What is meant by CMOS testing? Explain the need for testing.
b) Discuss about layout design for improved testability. Consider a suitable example.

dCODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

THEORY OF COMPUTATION

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Construct FA accepting strings over {0,1}, whose every block of 4 consecutive symbol contain at least 3 0's.
b) Prove the "L be the language accepted by NFA then there exists it accepts DFA.

2. a) Give the Moore machine for input from $(0+1)^*$, if the input ends in 101, output A; if the input ends in 110, output B; otherwise output C.
b) Give the nondeterministic finite automata accepting the language with the set of all strings over the alphabet $\{a,b,c\}$ that have the same value when evaluated left to right as right to left by multiplying according to the table given below.

	a	b	c
a	a	a	c
b	c	a	b
c	b	c	a

3. a) Generate the regular expression for the CFL given below
S → 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 generating the set of all strings over alphabet $\{a.b\}$ with exactly twice as many *a*'s as *b*'s.
b) Construct left linear and right linear grammars for the languages **$(((01+10)^*11)^*)00)^*$.**

5. a) What is Chomsky Normal Form? Explain.
b) Given grammar **G=({A_1,A_2,A_3},{*a,b*},P, A_1),** where P consists the following:
$A_1 \rightarrow A_2 A_3$; $A_2 \rightarrow A_3 A_1 \mid b$; $A_3 \rightarrow A_1 A_2 \mid a$
Convert the above grammar to GNF

6. a) Find a Chomosky normal form equivalent to the following CFG
S→aSAB/a, A→bAS/b, B→SaA/c, A→aa
b) Remove all unit productions, all useless productions and all ε-productions for the grammar
S→aA/aAB,
A→AbA/ε,
B→bB/bbaC, C→bB.

7. a) Design Turing Machine for the language to perform adding of two unary numbers.
b) Write a short notes on Church hypothesis.

8. a) Explain Post correspondence Problem
b) Construct the LR(0) items for the given grammar
E → E +T /E * E
T → T *F/ F
F → (E) / a

CODE No.:10BT60502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

UNIX PROGRAMMING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain UNIX Architecture. Compare UNIX with other operating systems.
b) Explain general purpose utilities and file handling utilities in UNIX.

2. a) Discuss the following commands in detail with suitable examples.
i) cat ii) egrep iii) join iv) sort
b) What are environmental variables? Explain the following environmental variables with examples.
i) SHELL ii) LOGNAME iii) PATH

3. a) What is piping? Explain with examples.
b) What is the difference between redirection and piping? Explain with examples.

4. a) Write a program for **move**, **cp** commands.
b) Explain the fseek, fgets, fflush and fwrite commands with a case study.

5. a) Write about *ulink* system call and give an example.
b) Write about *write* system call and illustrate with an example.

6. Explain in detail read/write locking.

7. a) What are named and unnamed pipes? How are they created? Give an example.
b) Explain in detail how the IPC functionality is provided by message queues.

8. a) Describe the syntax and purpose of the each of the following:
i) socket ii) bind iii) accept iv) listen v) connect
b) Explain briefly the byte order and address conversion functions.

CODE No.:10BT60503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

DATA WAREHOUSING AND DATA MINING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain how a data warehouse is different from database.
b) Discuss various steps involved in the decision process of a data warehouse.

2. a) List and describe the primitives for specifying a data mining task.
b) Describe the challenges to data mining regarding mining methodology and user interaction issues.

3. a) Discuss in detail with examples whenever necessary, four different views regarding the design of a data warehouse.
b) Discuss in detail with examples whenever necessary, the software engineering point of view of a data warehouse and some approaches.

4. a) A database has five transactions Let Min-Sup=60% and Min-conf=80%

TID	items-bought
T100	{K,A,D,B}
T200	{D,A,C,E,B}
T300	{C,A,B,E}
T400	{B,A,D}
T500	{C,A,D}

Find all frequent item sets using FP growth
b) Explain the approaches for mining multi level association rule mining.

5. a) What is data classification? Explain about decision tree induction algorithm with an example.
b) Explain the process of evaluating the accuracy of a classifier or a predictor.

6. a) How dissimilarity is calculated among the objects which are binary variables?
b) Explain the categorization of major clustering algorithms.

7. a) Discuss in detail with examples whenever necessary, mining data streams.
b) Discuss in detail with examples whenever necessary, mining time series data.

8. Write a short notes on the following:
a) spatial data mining
b) web mining

CODE No.:10BT60504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

DISTRIBUTED COMPUTING

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Compare the connection oriented and connectionless Inter Process Communication (IPC).
b) Explain the architecture of distributed applications.

2. a) What is event synchronization? Explain event synchronization of the following modes of IPC
i) Synchronous Send and Asynchronous Receive
ii) Synchronous Send and Synchronous Receive
b) Write about deadlocks and timeouts.

3. a) Explain about peer - to- peer paradigm of distributed computing.
b) What is the use of mobile agent in distributed system? Explain.

4. a) What is socket with non-blocking I/O operation?
b) Explain client server architecture with neat diagram.

5. a) Explain the architecture of Java RMI.
b) Compare RMI and Socket API.

6. a) What are the characteristics of JINI?
b) Briefly explain about distributed Multimedia systems.

7. a) Compare computational grid with data grid.
b) Explain various grid components.

8. Explain various parallel programming models and paradigms.

CODE No.:10BT61001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

OPTOELECTRONIC AND LASER INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the various mechanisms that constitute for the attenuation of signals in the optical fiber. Illustrate the signal degradation due to various factors.
b) A 15 km optical fiber link uses fiber with a loss of 1.5 dB/km at 1300 nm. Suppose fiber is connected with a connector for every 1 km with a loss of 0.8 dB each. Determine the minimum mean optical power which must be launched into the fiber in order to maintain a mean optical power of 0.3 μW at the detector.

2. a) State the two major categories of fiber-fiber joint and indicate the differences between them.
b) Elaborate the construction of an Avalanche photodiode and its conversion process involved with a neat diagram.

3. a) Discuss briefly about Polarization mode Dispersion due to Birefringence. Explain the concept of Beat length due to polarization modes.
b) What is ***moiré fringes***? State the application of ***moiré fringes*** in digital image processing.

4. a) Explain properties of lasers and discuss about laser modes.
b) Explain about solid laser.

5. a) Explain with neat diagram the application of lasers in material processing.
b) Explain operation of laser Doppler velocity meter with neat sketches.

6. a) Investigate the procedures used for removal of tumors using lasers.
b) How laser surgeries are advantageous over conventional methods?

7. a) What is holography? Explain the basic methods in it.
b) With the help of neat sketches, explain about holographic components.

8. a) Explain the principle of Faraday effect.
b) Construct a magneto-optic device to measure high voltage in a transmission line.

CODE No.:10BT61002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

BIOMEDICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the desirable characteristics of biomedical instrumentation system? Explain
b) What are the different types of muscles? Explain the importance of motor unit in the muscular contraction.

2. a) Draw the diagram of a neuron and explain its electrical properties.
b) Discuss the sources of bioelectric potentials.

3. a) Explain the principal and working of transducers in biomedical applications.
b) Give the equivalent circuit diagram of surface electrode placed over the skin and explain its function.

4. a) With a neat sketch, give interpretation of ECG waveform.
b) Discuss about blood flow and heart sound measurement.

5. a) Explain about nervous system of human body.
b) Discuss about electrode placement for EEG recording.

6. a) Write the function of microwave Diathermy.
b) What is meant by pacemaker and explain the operation of the same.

7. a) Explain in detail about mechanism of the respiratory system.
b) Write a short note on pneumotachograph.

8. a) Explain the principle and working of MRI scanning system.
b) Discuss the method of radiography and list its applications.

CODE No.:10BT61201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is Unified Modeling Language? Explain the goals and benefits of it.
b) Explain the waterfall method of modeling the system.

2. a) Explain, how to model the static and dynamic types.
b) How can we control the visibility of elements present in the package? Explain with example.

3. a) List and explain the common properties of a class diagram.
b) Explain, how to model an object structure.

4. a) Discuss about Activity diagrams.
b) Give the Usecase modeling for Library Management system.

5. a) Explain about the analysis, design, implementation and testing of usecase driven process development.
b) Describe the steps to forward engineering to reverse engineering a usecase diagram.

6. a) Enumerate the steps involved to model multiple flows of control and IPC.
b) Discuss in detail about State machines along with simple state, nested states, concurrent states, different events and action within each state.

7. a) Give the Deployment diagram to model fully distributed system.
b) Write notes on Implementation diagrams.

8. a) What do you mean by usecase realization? Explain
b) Write a note on Package diagrams and State chart diagrams.

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

COMPUTER NETWORKS

[Information Technology, Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Describe the following with suitable diagrams:
   a) Compare Connection Oriented and Connectionless Services
   b) Draw the OSI/ISO reference model
   c) Network application layer software

2. Explain the following:
   a) Time division multiplexing
   b) Wavelength division multiplexing
   c) Synchronous optical network

3. Given the data word 10100111 and the divisor 10111
   i) Show the generation of codeword at the sender site. (using binary division)
   ii) Show the checking of the codeword at the receiving site.(assume no error)

4. Explain Ethernet protocol with efficiency calculations.

5. a) Explain IPv4 address categories.
   b) Explain MULTICAT routing algorithm.

6. a) Explain the comparisons of UDP over TCP.
   b) Write short notes on functions of Transport services.

7. Explain about Electronic Mail.

8. a) Distinguish between 802.11b and 802.16a.
   b) Differentiate between 3G and 4G networks.

CODE No.:10BT61301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

DIGITAL CONTROL SYSTEMS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With suitable diagram, explain any two methods of Digital to Analog Conversion.
b) State and explain Sampling theorem.

2. a) State and explain i) Initial value theorem ii) Final value theorem
b) Obtain the inverse Z- transform of

i) $X(z) = \dfrac{Z(Z+2)}{(Z-1)^2}$ ii) $\dfrac{Z^2}{(1+Z)(1-Z^2)}$

3. a) Solve the following difference equation by the use of Z- transform method.

$x(k+2) + 3x(k+1) + 2x(k) = 0$; Given $x(0) = 0, \quad x(1) = 1$

b) Explain the procedure for obtaining the pulse transfer function of a closed loop transfer function.

4. a) Write about canonical forms for discrete - time state space equations by diagonal canonical form.
b) Write about canonical forms for discrete - time state space equations by Jordan canonical form.

5. a) Prove the state controllability that "no two Jordan blocks in Jordan equation should associated with the same eigen values"
b) Obtain the complete state controllability for a linear time- invariant discrete-time control system.

6. a) Explain about primary strips and complementary strips.
b) Consider the discrete-time unity-feedback control system (with sampling period T = 1 sec) whose open loop pulse transfer function is given by

$$G(Z) = \frac{K(0.3679Z + 0.2642)}{(Z - 0.3679)(Z - 1)}$$

Determine the range of gain K for stability by use of Jury stability test.

7. a) Describe the functioning of digital PID controllers with neat diagram.
b) Explain the design procedure of digital controller through bilinear transformation.

8. Given system $\dot{X} = AX + BU$

Where, $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 0 \\ 0 & 1 \\ 1 & 1 \end{bmatrix}$

Design a linear state variable feedback such that the closed loop poles are located at -1, -2 and -3.

CODE No.:10BT61302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

ROBOTICS AND AUTOMATION

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the classification of robots by co-ordinate system.
b) Explain about manufacturing functions and automation strategies.

2. a) What are various types of reference frames attached to a robotic structure? Explain with Example.
b) Discuss the impact of induction of Robots on direct labor.

3. For the point **3i +7j+5k** perform the following operations:
i) Rotate 30º about x-axis.
ii) Rotate 45º about y-axis.
iii) Rotate 90º about z-axis.
iv) Translate 8 units along y-axis

4. a) With neat sketches, give the classification of the Wrist Based Grippers.
b) Describe the working principle of linear and rotary actuators with line diagrams.

5. What are the general considerations in robot material handling? Explain in detail.

6. a) What are robot programming languages? Explain their features and applications.
b) Write down VAL program statement for PNP (Pick and Place).

7. What factors have led to the development of automated guided vehicle? Do they have any disadvantages? Explain your answer with other material handling devices.

8. Explain the characteristics of Robot required for the following applications:
i) Machining of non cylindrical parts ii) Automatic Inspection
iii) Part loading and unloading iv) Electronic Assembly

CODE No.:10BT61501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

MODELING AND SIMULATION

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain selection of performance metrics to evaluate a system.
b) Discuss the key characteristics of Poisson and Geometric Distributions.

2. a) Draw the State Transition diagram for a birth and death process and explain.
b) Explain M/M/m Queuing Model with an example.

3. a) Briefly discuss the types of workloads that have been used to compare computer systems.
b) Explain the clustering techniques with their classes? Why clustering is not helpful if the goal is to compare the work load at different sites.

4. a) Discuss layered view of Distributed System monitor.
b) Write the issues in designing a program execution monitor.

5. a) Explain Probability and Statistic Concepts used to summarizing the data.
b) Discuss any two visual tests for verifying the Regression.

6. Explain the following
i) Confidential Intervals for Predicted Responses.
ii) Allocation of variation in experimental design.

7. a) Explain the Applications of Simulation.
b) Write the advantages and disadvantages of Simulation.

8. Explain how to compare and evaluate the Alternative System design of Meta modeling.

CODE No.:10BT62301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

BIOINFORMATICS

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Define Bioinformatics and discuss role of internet in Bioinformatics.

2. Define homology and how it is useful for Bioinformatics.

3. Discuss the DNA mapping methods in brief. Write the importance of DNA mapping.

4. Describe the local alignment statistics by using different scoring MATRICES.

5. How one can perform the Ramachandran plot by using Expasy server and describe the method?

6. Define secondary database and explain any one secondary database.

7. Define biochemical database. Write any two biochemical databases in detail.

8. Describe the **CLUSTAL W** and how you will perform the multiple sequence alignment if you have 100 sequences.

CODE No.:10BT62302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

IMMUNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Give list of milestones in Immunology and their significance in the history.

2. Discuss about the antigen presenting cells and functions of natural killer cells.

3. Discuss about innate immune factors of human body.

4. Write briefly on
a) Structure of Antibody b) Variations in ELISA

5. Explain the activation of B cells and their differentiation and effectors functions.

6. Give detailed account on MHC polymorphism.

7. Give an account of Type III hypersensitive reactions.

8. Explain in detail of various Immuno-deficiency diseases with reference to T and B-cells.

CODE No.:10BT62303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

ENZYME ENGINEERING

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Describe how enzymes are classified. Discuss various industrial applications of enzymes.

2. Discuss the methods employed for extraction and purification of enzymes from plants, animal and microbial sources.

3. Write short notes on the following:
a) Mechanisms of enzyme action b) Kinetics of single substrate reactions

4. Write short notes on the following:
a) Allosteric regulation of enzymes b) Deactivation kinetics

5. Describe enzyme immobilization by adsorption and enzyme immobilization by encapsulation.

6. Explain the analysis of film diffusion effects on kinetics of immobilized enzyme reactions.

7. Describe the design of packed bed enzyme reactions.

8. Explain briefly on:
a) Biosensors as analytical tools.
b) Applications of enzymes in leather and textile industries.

CODE No.:10BT62304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

APPLIED TRANSPORT PHENOMENA

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the analogy among momentum, heat and mass transfer.

2. Define Newton's law of viscosity. Explain it by considering two parallel plates separated by a distance of 'x' meters and at time t = 0, the lower plate is kept in motion with a velocity of 'V' m/sec. The fluid between the plates is a liquid.

3. A Newtonian fluid flows through a long vertical circular pipe of radius R and length L under a pressure difference. From shell momentum balance approach, find the expressions for momentum flux, velocity profile, maximum velocity, average velocity and volume rate of flow.

4. Do the dimensional analysis on the equation of motion and present the same in the dimensional form. Explain the various terms involved in the equation and their physical significance.

5. Explain the operating conditions for turbulent shear damage.

6. Discuss and write the equations for heat flux with a nuclear heat source.

7. A dimerization reaction $\mathbf{2A} \rightarrow \mathbf{A_2}$ is being carried in a catalytic reactor. Assume that a diffusion resistance lies in the stagnant gas film of thickness δ and surrounding the catalyst surface. Derive an expression for the local rate of conversion of **A** to $\mathbf{A_2}$ where the reaction is instantaneous.

8. Discuss the factors that affect 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/Supplementary Examinations June - 2014

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 principles of spectroscopic analysis.

3. a) What is an interacting and non-interacting system?
b) Derive an expression for the response of two non-interacting liquid level tanks in series with equal time constants for a step change at the inlet flow rate.

4. a) Define SERVO and REGULATORY problems with examples.
b) Derive the transfer function of a Non-interacting system **$H_2(s)/Q(s)$.**

5. Discuss the rules for plotting Root locus diagram in detail.

6. a) Write graphical rules for plotting Bode diagrams.
b) What is Bode stability criterion? Discuss its application in analyzing stability of a general control system.

7. a) Discuss merits and demerits of feed forward controller with respect to feed back controller.
b) Explain what are linear equal percentage and square root characteristics of control valves.

8. Discuss about design of a fermentation control system.

CODE No.:10BT70501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

PRINCIPLES OF COMPILER DESIGN

[Information Technology, Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is an interpreter? Differentiate between interpreter and compiler.
b) Explain the compiler construction Tools.
c) What is meant by Bootstrapping of compiler? Explain with example.

2. a) What are the problems associated with Top down parsing? Explain in detail.
b) Explain the method of construction of predictive LL(1) Parser.

3. a) Explain the method of error recovery in Parsing.
b) Explain the YACC-Automatic Parser Generator and give its specification.

4. a) Define S attributed and L attributed definitions.
b) Differentiate between S attributed and L attributed Grammars.

5. a) Give the specification of simple type checker for statements, expressions and Functions.
b) Explain the concept of Type Systems in detail.

6. a) Explain in detail different dynamic storage allocation strategies.
b) Explain how an access to non local names in static scope.

7. a) Explain the role of DAG in code optimization.
b) How to perform local optimization.

8. a) Write in detail about function-preserving transformations.
b) Discuss briefly about Peephole Optimization.

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations June - 2014

WEB PROGRAMMING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Create a simple HTML page which demonstrates the use of the various types of lists. Try adding a definition list which uses an unordered list to define terms.
b) Describe the different ways that styles can be added to a page.

2. Create a webpage which uses prompt() dialogs to ask a user for their name, age and branch. Display the information they enter on page using table.

3. What is XML schema? Explain the working of XML schema with an example.

4. What is session tracking? Write a program to illustrate session tracking using HttpSession.

5. a) What are the limitations of Servlets? How JSP overcomes these problems?
b) Write short notes on JSP scripting elements.

6. Write JDBC program to display the all records of student table in a tabular form.

7. Write a program to read Username, Email and DOB details from the form and display using Java Bean.

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/Supplementary Examinations June - 2014

CRYPTOGRAPHY AND NETWORK SECURITY

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain network access security model.
b) Construct a Caeser cipher and convert the word "the Network security" into cipher text with k=3.

2. a) Explain AES algorithm.
b) Compare link encryption with the end-to-end encryption.

3. a) Explain public key cryptography and its characteristics.
b) Explain Elliptic key cryptography.

4. a) Explain PGP operations.
b) Explain functions of S/MIME.

5. a) What are the various ways of combining security associations?
b) Explain about ISAKMP.

6. Explain the following in detail
i) Dual signature ii) Web security approaches iii) Change cipher spec protocol

7. a) Write about Intrusion Detection Technique.
b) Write about distributed denial of service attacks.

8. a) What is bastion host?
b) Explain different firewall configurations.

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

OPTIMIZATION TECHNIQUES

[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 linear and non linear programming problems?
b) Write the engineering applications of optimization.

2. Minimize $f = 9 - 8x_1 - 6x_2 - 4x_3 + 2x_1^2 + 2x_2^2 x_3^2 + 2x_1x_2 + 2x_1x_3$.
subjected to $x_1 + x_2 + 2x_2 = 3$ by Lagrange multiplier method.

3. Use two-phase simplex method to solve

$$\text{Minimize} \quad z = 15/2\, x_1 - 3x_2$$

$$\text{subject to constraints} \quad 3x_1 - x_2 - x_3 \geq 3$$

$$x_1 - x_2 + x_3 \geq 2$$

$$x_1, x_2, x_3 \geq 0.$$

4. Solve the following Linear programming problem using the branch and bound method

Maximize $f(x) = 3x_1 + 4x_2$

Subject to $7x_1 + 11x_2 \leq 88$,

$3x_1 - x_2 \leq 12$,

$x_1, x_2 \geq 0$, x_1, x_2 are integers.

5. Find the minimum of $f = \lambda^5 + 5\lambda^5 - 20\lambda + 5$ by Quadratic interpolation method initial step size is taken as $t_0 = 0.5$ and A=0.

6. Minimize $f = 2x_1^2 + x_2^2$ by using the steepest descent method with the starting point (1,2). Perform three iterations only.

7. Minimize $\mathbf{f(x) = (x_1-1)^2+(x_2-5)^2}$

Subject to $\mathbf{-x_1^2 + x_2 \leq 4}$

$\mathbf{-(x_1-1)^2 + x_2 \leq 3}$

Starting from the point $X_1 = \begin{Bmatrix} 1 \\ 1 \end{Bmatrix}$ and using the following methods of solution:

i) Complex method ii) Interior penalty function method

8. Solve the following LP problem by dynamic programming

Maximize $Z = 3x_1 + 5x_2$

Subject to

$\mathbf{x_1 \leq 4}$

$\mathbf{x_2 \leq 6}$

$\mathbf{3x_1 + 2x_2 \leq 18}$

$\mathbf{x_1 \geq 0, x_2 \geq 0}$

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

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

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

Answer any FIVE questions
All questions carry equal marks

1. What is demand forecasting? Explain the methods of demand forecasting?

2. What is Break-even Point? Explain how management of a firm can use it as a tool for profit planning.

3. What are the objectives and policies of pricing? Explain.

4. Explain the main objectives of new economic policy 1991 of Government of India.

5. What is double entry system? Explain the classification of accounts.

6. Prepare the final accounts from the following trial balance extracted from the bank of Mr. Praveen for the year ending with 31-12-2007, if closing stock was valued at Rs.90,000.

Particulars	**Dr. (Rs.)**	**Cr. (Rs.)**
Drawing and Capital	10,000	1,19,400
Plant & Machinery	38,300	
Salaries	10,800	
Loan Payable		79,630
Interest on Loan	14,370	
Furniture	52,000	
Purchases and Sales	2,50,000	3,41,340
Opening Stock	95,300	
Wages	43,750	
Insurance	930	
Discounts Allowed	3,900	
Sundry Debtors and Creditors	62,000	59,630
Cash at Bank	18,650	
Total	**6,00,000**	**6,00,000**

7. What do you mean by capital budgeting? And also explain different methods of capital budgeting.

8. Explain the features of Tally accounting package.

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

LINEAR AND DIGITAL IC APPLICATIONS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) How fast can the output of an OP-amp change by 10V if its slew rate is 1v/μs?
b) Derive the slew rate equation for an OP-amp.

2. a) Derive the expression for the output voltage of a non-inverting amplifier.
b) Explain about any two linear and non linear applications of OP-AMP.

3. a) What is Phase Locked Loop? List the basic building blocks of the discrete PLL. What is the major difference between digital and analog PLLs ?
b) List the applications of PLL? Explain each.

4. a) Write a short note on various CMOS families and compare them.
b) Explain how a CMOS device is destroyed.

5. a) Consider a CMOS 8 bit binary counter clocked at 16MHz for the purpose of computing the counter's dynamic power dissipation. What is the transition frequency of the least significant bit and the most significant bit? For the purpose of determining the dynamic Power consumption of the 8 output bits, what frequency should be used?
b) Explain why the number of CMOS inputs connected to the output of a CMOS gate generally is not limited by DC fan-out considerations?

6. Explain the following
a) Libraries and packages.
b) Structural design elements.
c) Data flow design elements.

7. a) Design a 4x4 combinational multiplier and write the corresponding VHDL program.
b) Explain the binary to gray code and BCD to excess-3 code conversion?

8. a) Distinguish between latch and flip-flop. Show the logic diagram for both. Explain the operation with the help of function table.
b) Write VHDL dataflow program for the Shift Register.

CODE No.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

PRINCIPLES OF COMMUNICATIONS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define autocorrelation function and prove all its properties.
b) What is Convolution? Explain time-convolution and frequency-convolution theorems.

2. a) A modulating signal $v(t)$ in an AM-SC system is a multiple tone signal given by $v(t) = V_1 \cos\omega_1 t + V_2 \cos\omega_2 t + V_3 \cos\omega_3 t$. The signal $v(t)$ modulates a carrier $V \cos\omega_c t$. Plot the single sided trigonometric spectrum and find the bandwidth of the modulated signal. Assume that $\omega_1 > \omega_2 > \omega_3, and\ V_1 > V_2 > V_3$.
b) The r.m.s voltage of a carrier wave is 5 V before modulation and 5.9 V after modulation. What is the percentage of modulation? Calculate the modulated power if the unmodulated power is 2 kW.

3. a) Explain the Armstrong method for the generation of wideband FM?
b) A carrier wave of frequency 100 MHz is frequency modulated by a sinusoidal wave of amplitude 20 V and frequency 100 KHz. The frequency sensitivity of the modulator is 25 KHz per volt. Determine approximate bandwidth of FM signal.

4. a) Explain the methods for demodulation of PAM signals.
b) What are FDM and TDM? Discuss them and give the practical application of the two in the communication systems.

5. a) With suitable block diagram explain the principle of operation of a PCM system.
b) Explain the generation of Delta modulation signal.

6. a) State and Explain the different types of Digital Modulation techniques.
b) Differentiate PSK, DPSK and QPSK.

7. a) State and explain Huffman coding with suitable example.
b) An event has six possible outcomes with the probabilities 0.5, 0.25, 0.125, 1/16, 1/32, 1/32. Find the entropy of the system. Also find the rate of information if there are 16 outcomes per second.

8. a) Explain Linear Block Codes.
b) State and Explain with examples the Convolution Codes.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

DESIGN AND ANALYSIS OF ALGORITHMS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss probabilistic analysis in detail.
b) Consider two functions f (n)=$3n^2$+5 and g(n)=n^2. Prove with graphical representation that asymptotic upper bound of f(n) is g(n).

2. a) Explain Collapsing Rule for FIND and its complexity.
b) Explain Strongly connected Components and Equivalence Relations.

3. Write Merge sort algorithm. Explain it by analyzing its time complexity.

4. a) What is Greedy Method? Explain with an example.
b) Distinguish between Divide and Conquer and Backtracking approaches.

5. Let n = 4, and (a_1, a_2, a_3, a_4) = (do, if, need, while) Let P(1 **:** 4) = (3, 3, 1, 1) and Q(0 **:** 4) = (2, 3, 1, 1, 1). Construct Optimal binary search tree with detailed explanation.

6. a) Distinguish between:
i) Big-Oh and Little-Oh Notation
ii) Big-Omega and Little-Omega Notation
b) Write the pseudo-code of DFS and explain with the help of a graph.

7. Draw the portion of the state space tree generated by LCKNAP for the knapsack instances: N=5; (p_1,p_2,…p_5)=(10, 15, 6, 8, 4); (w_1,w_2,…w_5)=(4, 6, 3, 4, 2) and M = 12.

8. a) Write and explain non-deterministic Sorting problem.
b) Prove that the node cover problem is NP- hard.

CODE No.:10BT60102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

STEEL STRUCTURES - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Classify the steel structural members based on the load transfer.
b) What are the main objectives of a structural engineer while designing steel structures?

2. a) Explain the various types of failures of bolted joints.
b) Design a double cover butt joint to connect two plates each of thickness 10 mm and 300 mm wide. Use M 20 bolts of grade 4.6. Also find the efficiency of the joint.

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 double tension member connected on each side of a 10 mm thick gusset plate to carry a factored axial force of 340 kN. Use 20 mm black bolts. Sketch the member.

5. Design a simply supported beam of effective span 3**.**0 m subjected to a factored concentrated load of 200 kN at its mid-span.

6. Design a stanchion 4**.**0 m long in a building subjected to a factored load of 550 kN. Both ends are effectively restrained in direction and position. Use steel of grade 410.

7. Design a battened column with two channels back to back with an effective length of 8**.**5 m subjected to an axial load of 1800 kN.

8. Design a suitable bolted gusset plate for a column ISHB 350 @ 661**.**2 N/m, carrying an axial compressive factored load of 2459 kN. The base rests on M25 concrete pedestal. Use 24 mm diameter bolts of grade 4**.**6 for making the connection.

CODE No.:10BT60104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ENVIRONMENTAL ENGINEERING - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the importance of protected water supply system to the community in rural and urban areas.
b) What are the stages involved in planning conventional water supply system? Describe these stages with the help of a flow diagram.

2. a) Using the data given below estimate the population for 2021. Use geometric increase and incremental increase methods and comment on their suitability.

Year	1951	1961	1971	1981	1991	2001
Population (Crores)	0.5	0.95	1.75	2.8	4.25	5.58

b) What do you mean by per capita demand? How do you estimate it? Explain factors influencing per capita demand.

3. a) What are Intakes? Naming the different types of intakes, explain any one type with a neat sketch.
b) Explain with neat sketches about various methods of layouts of distribution networks with significance of each method.

4. Write briefly a note on Physical, Chemical and Biological Characteristics of water.

5. a) Draw the conventional water treatment plant 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 gravity rapid sand filter for treating water required for a populations of 50000. The rate of supply of water is 180 lpcd. The filtration is 5 m^3/hour/m^2. Assume any data if necessary suitably.
b) What are methods of disinfection in water treatment? What is pre-chlorination, break point chlorination and residual chlorine.

7. a) Explain with a neat sketch and with the chemical equations how hard water is softened in a zeolite water softener.
b) Write about treatment methods for removal i) Colour ii) Arsenic

8. a) Discuss the water storage requirement of a house of a residential building and how it is accomplished.
b) Write short note on detection and prevention of water leakage.

CODE No.:10BT60105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

TRANSPORTATION ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Briefly outline the highway development in India.
b) Briefly explain the engineering surveys needed for locating a new highway.

2. a) Enumerate the steps for practical design of superelevation.
b) Design the rate of superelevation for a horizontal highway curve of radius 500 m and speed 100 kmph.

3. Explain in detail the aggregate crushing test and Los Angeles abrasion test to decide the suitability of road stones for use in construction.

4. a) Write on the factors affecting the design of flexible pavements.
b) Determine the warping stress at interior, edge and corner regions in a 25cm thick concrete pavement with transverse joints at 11 interval and longitudinal joints at 3.5m intervals. The modulus of sub grade reaction (K) is 6.5Kg/cm^3 . Assume temperature differential for day conditions to be 0.7^{0}C per cm slab thickness. Assume radius of loaded area as 15cm for computing warping stress at the corner. Take e= 10X10^{-6} per ^{0}C, E = 3.5X10^{5}Kg/cm^2 and Poisson's ratio as 0.15 .

5. a) Explain the importance of erosion control and drainage of slopes. How are these achieved.
b) Indicate how the filter material is designed for use in sub-surface drainage system.

6. a) Describe the functions of rails, sleepers and ballast in detail.
b) Explain Creep of rails theories related to creep.

7. a) Explain the different classifications of gradients in railway.
b) With neat sketch explain the function of permanent way components of BG track on embankment.

8. a) Enumerate the factors affecting site selection for airport.
b) Explain wind rose diagram. How is it obtained?

CODE No.:10BT60106

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

FOUNDATION ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain what is meant by disturbed and undisturbed samples. How the degree of disturbance is measured?
b) Write down the design considerations of open drive sampler.

2. a) A retaining wall, 8m high, with a smooth vertical back, retains a clay backfill with $c^1 = 15$ kN/m^2, $\varphi^1 = 10^0$ and $\gamma = 18$ kN/m^3. Calculate the total active thrust on the wall assuming that tension cracks may develop to the full theoretical depth.
b) Explain Culmann's graphical method for estimating active earth pressure.

3. a) What is retaining wall? Discuss about the various types of retaining walls.
b) A trapezoidal masonry retaining wall 1m wide at top and 3m wide at its bottom is 4m high. The vertical face is retaining soil ($Ø=30^0$) at a surcharge angle of 20^0 with the horizontal. Determine the maximum and minimum intensities of pressure at the base of the retaining wall. Unit weights of soil and masonry are 20kN/ m^3 and 24kN/m^3 respectively. Assuming the coefficient of friction at the base of the wall as 0.45, determine the factor of safety against over turning.

4. a) Explain the method of Bishop's simplified method for stability analysis of slopes.
b) A cutting is made 10m deep with sides sloping at 8**:**5 in a clay soil having mean undrained shear strength of 50 kN/m^2 and mean bulk density of 19 kN/m^3. Determine the factor of safety under undrained conditions given the following details of the impending failure circular surface.
The centre of rotation lies vertically above the middle of the slope. Radius of failure arc16.5m.The deepest position of the failure surface is 2.5m below the bottom surface of the cut. Allowance to be made for tension cracks developing to a depth of 3.5m from surface. Assume that there is no external pressure on the face of the slope.

5. a) What are the points to be kept in consideration for locating of depth of footing?
b) A continuous footing of width 2**.**5m rests 1**.**5m below the ground surface in clay. The unconfined compressive strength of the clay is 150kN/m^2. Calculate the ultimate bearing capacity of the footing, when there is no effect of water table and when water table reaches ground surface. Take $\gamma = 18$kN/m^3, $\gamma_{sat} = 20$kN/m^3.

6. a) Write the notes on allowable settlements of various structures.
b) The following data is obtained from a plate load test on 60 × 60 cm plate:

Pressure (kPa)	0.0	240	480	720	960	1200	1440	1680
Settlement (mm)	0.0	2.0	5.0	7.5	12.0	16.0	23.0	28.0

Plot a log-log graph and estimate the ultimate bearing capacity of the soil.

7. A group of 9 piles with 3 piles in a row was driven into soft clay extending from ground level to a great depth. The diameter and the length of the piles were 30 cm and 10m respectively. The unconfined compressive strength of the clay is 70 kPa. If the piles were placed 90 cm center to center, compute the allowable load on the pile group on the basis of a shear failure criterion for a factor of safety of 2.5.

8. a) What are 'Tilts and Shifts'? What are the remedial measures to control these?
b) Sketch a completed well foundation for a Bridge pier. Indicate the various components and their functions.

CODE No.:10BT60202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

POWER SEMICONDUCTOR DRIVES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operation of 1-Ø full converter fed DC separately excited motor for continuous current operation and also obtain speed-torque characteristics.
b) A 200 V, 950 rpm, 12.8 A separately excited DC motor has armature circuit resistance and inductance of 2 Ω and 150 mH respectively. It is fed from a 1-Ø half controlled rectifier with an AC source voltage of 230 V, 50 Hz. Calculate motor Torque for α =160° and speed = 660 rpm.

2. a) Explain the operation of 3-Ø semi converter fed DC series motor for continuous current operation and also obtain the expressions for output voltage and output current.
b) The speed of a 150 HP, 675v, 1750 rpm, DC separately excited motor is controlled by a 3-ϕ Full converter. The converter is operating from a 3-ϕ, 440V, 50 Hz Supply. The rated armature current of the motor is 170A. The motor parameters are R_a=0.099Ω, L_a= 0.73 mH and $K_a\phi$= 0.33 V/rpm. Neglect the losses in the converter system. Determine the No-load speeds at firing angles α= 0° and α = 30°. Assume that at No-load, the armature current is 10% of the rated current and is continuous.

3. a) Explain the operation of four quadrant operation of dc separately excited motor.
b) Discuss relative merits and demerits of four quadrant dc drives employing non-circulating and circulating current dual converters.

4. a) Explain the principle of speed control of a dc motor and show how it can be achieved by a chopper.
b) A 230V, 1200rpm, 15A separately excited motor has an armature resistance of 1.2Ω. Motor is operated under dynamic braking with chopper control. Braking resistance has a value of 20Ω.
i) Calculate duty ratio of chopper for motor speed of 1000rpm and braking torque equal to 1.5times rated motor torque.
b) What will be the motor speed for duty ratio of 0.5 and motor torque equal to its rated torque?

5. a) Discuss briefly the stator voltage control scheme of induction motor. Also draw and explain the speed torque curves.
b) A 3-Φ stator connected induction motor operating at a frequency of 60 Hz consists of 4-poles. The parameters of the stator and rotor referred to stator side are R_1=R_2=0.024 Ω and X_1=X_2=0.18 Ω. If the motor is controlled by the variable frequency control with v/f constant ratio, determine starting torque and rotor current at an operating frequency of 12Hz.

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. a) Explain separate control and self control of synchronous motor.
b) With the suitable circuit diagrams discuss in detail the principle of operation of self controlled synchronous motors employing cycloconverters.

8. Explain briefly the following drives:
a) What is stepper motor? Explain drive circuits for stepper motor with neat diagram.
b) Battery powered vehicles

CODE No.:10BT60401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

DIGITAL SIGNAL PROCESSING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define symmetric & anti symmetric signals with example.
b) What is the classification of discrete time systems?

2. a) Determine the Z transform of the following system

$$x(n) = (-1)^n \, Cos\left[\frac{n\pi}{3}\right] u(n)$$

b) Explain about methods to evaluate circular convolution of two sequences.

3. Compute a 4 point DFT of the following sequences using
a) DIT algorithm
b) DIF algorithm
i) x(n) = { 1, 2, 3, 4}
ii) x(n) = {1, 1, -1, -1}
iii) x(n) = {1, 2, -1, 1}
iv) x(n) = {0, 1, 2, 3}

4. Write properties of the Z transform.

5. Design a digital Butterworth filter that satisfies the following constraints using bilinear transformation. Assume T=1**s**

$$0.9 \le \left|H(e^{j\omega})\right| \le 1 \; ; 0 \le \omega \le \frac{\pi}{2}$$

$$\left|H(e^{j\omega})\right| \le 0.2 \; ; \frac{3\pi}{4} \le \omega \le \pi$$

6. a) Prove that an FIR filter has linear phase if the unit sample response satisfies the condition **h(n)= ± h(M-1-n), n =0,1,….. M-1**.Also discuss symmetric and anti symmetric cases of FIR filter.
b) The impulse response of a casual LTI FIR system is given by

$$h(n) = a_0\delta(n) + a_1\delta(n-1) + a_2\delta(n) + a_3\delta(n-3) + a_4\delta(n-4) + a_5\delta(n-5) + a_6\delta(n-6)$$

for what values of the impulse response samples will its frequency response $\mathbf{H(e^{j\omega})}$ have a linear phase.

7. a) With an example explain the sampling process.
b) Draw the block diagram of a multistage decimator and interpolator.

8. Write short notes on:
a) Trans multiplexer
b) Signal compression

CODE No.:10BT60402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

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

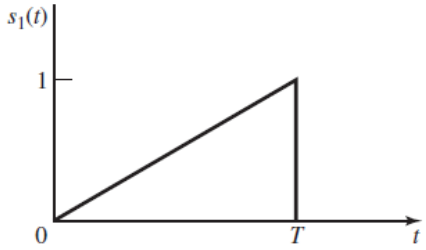
Answer any FIVE questions
All questions carry equal marks

1. a) Compare and contrast uniform and non-uniform quantization.
b) Explain anyone of the non-linear quantization standard.

2. a) For a sinusoid modulating signal $m(t)=A_m \cos \omega_m t$, Derive the expression for the maximum output signal to quantization noise ratio in DM system under assumption of no slope over load distribution.
b) Distinguish among PCM, DPCM, DM and ADM.

3. a) Explain about BPSK with neat sketches of waveforms.
b) Discuss about the principle of M-ary - ASK in detail.

4. a) Derive the optimum filter for a binary coded signal transmission system.
b) What is a matched filter?



Derive the impulse response of the matched filter for the above transmit signal.

5. a) Consider a random sequence of 16 binary digits where the probability of occurrence is 0.5. How much information is contained in this sequence?
b) Discuss in detail about the 'mutual information'.

6. a) State and explain Shannon-Fano theorem.
b) Describe the steps in the Huffman encoding algorithm.

7. a) Explain the need for error control coding.
b) The generator matrix of a (7, 4) block code is given below. Find all code vectors of this code.

$$G = \begin{bmatrix} 0\ 0\ 0\ 1 : 1\ 0\ 1 \\ 0\ 1\ 0\ 0 : 1\ 1\ 1 \\ 0\ 0\ 0\ 0 : 1\ 1\ 0 \\ 0\ 0\ 0\ 1 : 0\ 0\ 1 \end{bmatrix}$$

8. a) Describe tree and trellis diagrams for decoding using Viterbi algorithm.
b) Explain various approaches of encoding in convolutional codes.

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CODE No.:10BT60403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

MICROWAVE ENGINEERING

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) An air-filled rectangular waveguide has dimension of a=6cms and b=4cms. The signal frequency is 3 GHz. Compute the following for the TE_{10}, TE_{01}, TE_{11}, TM_{11} modes.
i) Cut off frequency ii) Wavelength in the waveguide iii) Group velocity
iv) Phase constant v) Phase velocity vi) Wave impedance of the waveguide.
b) Distinguish between Strip and micro strip lines.

2. a) What are cavity resonators? Derive the equation for resonant frequency for a circular cavity resonator.
b) Derive the field expressions for a rectangular cavity resonator.
c) Calculate the lowest resonant frequency of a rectangular cavity resonator of dimension a=2cms, b=1cms, d=3cms.

3. a) Discuss about coupling mechanisms.
b) Differentiate the E plane and H plane Tee. How they are used to combine or divide the microwave power?

4. a) Explain the action of Isolator, Gyrator and Circulator using ferrite devices. Mention their typical applications.
b) Determine the Scattering parameters for a 10 dB directional coupler. The directivity D=30dB. Assume that it is lossless and the VSWR at each port is 1.0 under matched condition.

5. a) Derive an expression with the power output and efficiency of a two cavity klystron amplifier, starting from the basic principles.
b) Can a two cavity klystron be used as an Oscillator?

6. a) Explain the terms frequency pushing and frequency pulling with reference to Magnetron.
b) What is the travelling wave Magnetron? Explain its principle of operation.

7. a) Explain the operating principle of IMPATT diode.
b) Discuss any two applications of IMPATT diode.

8. a) Describe the method to measure low microwave power using Bolometric method.
b) Explain the method to measure low VSWR and reflection co-efficient.

CODE No.:10BT60404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

MICROPROCESSORS AND MICROCONTROLLERS

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

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the interrupt system in 8085.

2. Describe the functional units of 8086 microprocessor in detail.

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. Draw the block diagram of 8255 and explain its working. What is control word? Determine the control word for the following configuration of 8255:-
Port A -output
Mode of Port A - Mode
Port B - Output
Mode of Port B - Mode
Port C lower (Pins PC0 - PC2) - Output

5. a) Write down the features of 8251.
b) Discuss how 8251 is used for serial communication of data.
c) Explain the advantages of using the USART chips in microprocessor based systems.

6. Explain how the DMA controllers are interfaced with the conventional processors.

7. a) Describe briefly about internal and external memories of 8051 microcontroller.
b) List various addressing modes of 8051 microcontroller.

8. a) Discuss various Interrupts of 8051 and their priorities.
b) Explain the interfacing of seven segment display with 8051 and write a program for generating a sequence in seven segment display depending on your own assumptions.

CODE No.:10BT60405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

VLSI DESIGN

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Tabulate the comparison between MOS, CMOS and BiCMOS technologies various performance parameters.
b) Explain in detail about 'Metallization' and 'Encapsulation' related to IC fabrication process.

2. a) Deduce the expressions for MOS transistor drain-to-source current versus drain-to- source voltage relations.
b) Discuss about MOS transistor threshold voltage.

3. a) Explain step-by-step procedure for drawing stick diagram for single metal single Polysilicon NMOS technology.
b) Present the general CMOS logic-gate layout guidelines and draw the user defined layout drawing conventions.

4. a) Explain the concept of sheet resistance and apply it to compute the ON resistance (VDD to GND) of an NMOS inverter having pull up to pull down ratio of 4:1, if n channel resistance is $R_{sn} = 10^4$ per square.
b) Calculate the gate capacitance value of 5μm technology minimum size transistor with gate to channel capacitance value is $4 \times 10^{-4} pF/\mu m^2$.

5. a) Explain how the transistor might be sized to optimize the delay through the carry stage in parallel adder.
b) Design a two input XOR using a ROM.

6. Compare PLAs, PALs, CPLDs, FPGAs and standard cells in all respects.

7. a) What is simulation and explain the types of simulation?
b) Discuss about design capture and design verification tools.

8. a) What is CMOS testing? Explain its need and testing principles.
b) Discuss about layout design for improved CMOS testability.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

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 alphabets, strings, languages and discuss about various operations on sets.
b) Design a deterministic finite automata accepting the language that accepts set of all strings ending in 00 over the alphabet {0, 1}.

2. a) Write a procedure to convert NFA with ε-transition to NFA without ε-transitions.
b) Design Moore machine to determine the residue mod 4 for each binary string treated as integer.

3. a) Write the regular expression for the language with set of all strings with at most one pair of consecutive 0's and at most one pair of consecutive 1's over the alphabet {0,1}.
b) Construct finite automata equivalent to the regular expression $10+ (0+11)0^*1$.

4. a) What is meant by ambiguous in CFG? Show that $S \rightarrow aSbS / bSaS / \varepsilon$ is ambiguous.
b) What is parsing? Describe top-down and bottom-up parsing technique with suitable example.

5. a) What is meant by CNF? Write a procedure to convert context free grammar to CNF.
b) Eliminate useless symbols from the following grammar.

$S \rightarrow AB / CA,$
$B \rightarrow BC / AB,\ A \rightarrow a,\ C \rightarrow aB / b$

6. a) Construct a PDA that accepts $\{ww^R \mid w \text{ in } (0+1)^*\}$ by empty stack.
b) Construct a pushdown automata for the language with set of all strings over alphabet $\{a,b\}$ not of the form ww for some string w.

7. a) Explain about two-way infinite tape turing machines in detail.
b) Design a turing machine that recognizes the language $\{ 0^n1^n 0^n \mid n\geq 1\}$.

8. a) What is Hamilton circuit problem? Explain.
b) What is satisfiability problem? Explain with an example.

CODE No.:10BT60502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

UNIX PROGRAMMING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. What is an Operating System? With a neat diagram, describe in detail about the architectures and features of Unix Operating System.

2. a) Discuss the following commands in detail with suitable examples.
i) awk ii) cpio iii) tee iv) tar.
b) Explain the shell features of "while" and "for" with syntax. Give examples.

3. a) List and describe the UNIX redirection operators.
b) Briefly describe shell commands and command execution.

4. a) Explain the following with suitable examples.
i) opendir ii) closedir iii) mkdir iv) rmdir v) umask
b) Explain the absolute path name and relative path name with examples.

5. a) Write about ***ulink*** system call and give an example.
b) Write about ***write*** system call and illustrate with an example.

6. Explain in detail, advisory locking and mandatory locking.

7. a) What are pipes? Why we need pipes? Briefly describe the usage of named pipes.
b) What is shared memory? With a sample program briefly describe attaching and detaching of a shared memory segment.

8. Explain the following socket commands
i) connect ii) bind iii) listen iv) accept

CODE No.:10BT60503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

DATA WAREHOUSING AND DATA MINING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define Data Mining. What are the alternative names for Data Mining? How do you classify data mining systems?
b) Explain about:
i) Temporal Databases ii) Spatial Databases iii) Time Series Databases.

2. a) Suppose that a data warehouse consists of the three dimension time, doctor and patient and the two measures count and charge, where charge is the fee that a doctor charges a patient for a visit. Draw snowflake schema for the hospital.
b) Explain about various Indexing techniques used for efficient data access in OLAP.

3. a) Explain about the Discretization and Concept Hierarchy generation for numerical data.
b) List the different forms of Data Pre Processing and Explain about Data Integration.

4. a) Explain about constraint based association mining.
b) Explain Apriori algorithm with an example.

5. a) What is Data Classification? Explain about Decision tree Induction Algorithm with an Example.
b) Explain the process of evaluating the accuracy of a classifier or a predictor.

6. a) Explain about the types of Data in Cluster Analysis.
b) Explain about the Partitioning Methods.

7. a) Discuss in detail with examples whenever necessary, mining time series data.
b) Discuss in detail with examples whenever necessary, mining biological data.

8. a) Discuss in detail with examples whenever necessary, multimedia data mining.
b) Discuss in detail with examples whenever necessary, spatial data mining.

CODE No.:10BT60504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

DISTRIBUTED COMPUTING

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the advantages and disadvantages of distributed computing.
b) Explain the network Architecture with diagram.

2. a) Discuss about the event synchronization of the following modes of IPC
i) Synchronous Send and Synchronous Receive
ii) Asynchronous Send and Synchronous Receive
b) How threads are used for a blocking operation.

3. a) Using sockets in java write a snippet code to create a client/server model.
b) Briefly explain peer-to-peer paradigm and message system paradigm for distributed applications.

4. a) Explain the buffered and non-buffered primitives in detail.
b) Explain the different types of addressing used in a client server model.

5. a) Differentiate between unicasting and multicasting.
b) Explain distributed object Architecture.

6. a) What is common gateway interface?
b) Explain HTTP with event diagram.

7. a) Explain the servlet support architecture.
b) Explain the conceptual model of web services.

8. a) What is Message Queue System Paradigm? Explain message queue system models.
b) What are mobile agents? Give the advantages of mobile agents.

CODE No.:10BT61001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

OPTOELECTRONIC & LASER INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the following:
a) Laws of reflection.
b) Critical angle.
c) Dispersion.
d) Numerical aperture.

2. a) Explain important performance and compatibility requirements for detectors.
b) Explain principle and operation of P-N Photo Diode.

3. a) Explain the principle of two-beam interferometry. Give a detailed setup to measure temperature and pressure using Mach-Zehnder interferometer.
b) What is phase difference? How thickness of a glass plate can be measured using Interferometry?

4. a) Explain the concept of Mode locking principle in Solid state lasers.
b) An InP injection laser emits output wavelength at 0.94 μm with its longitudinal modes separated by 300 GHz. Considering the refractive index of InP to be 3.3, determine the length of the optical cavity and the no of longitudinal modes emitted.

5. a) What is Laser micromachining? List out the applications of micromachining in semiconductor industries.
b) Discuss the process of metal surface hardening using laser surface interaction.

6. Explain how laser instruments are useful for the following applications;
a) Plastic Surgery.
b) Oncology.
c) Removing tumors.

7. a) What is holography? Explain the basic methods in it.
b) With the help of neat sketches explain about holographic components.

8. a) Explain in detail about Electro-optic modulator.
b) Explain in detail about Acousto- optic modulators.

CODE No.:10BT61002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

BIOMEDICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List the characteristics of Bio amplifier.
b) Discuss the problems encountered with measurements from human beings.

2. a) Explain the propagation of electric potentials.
b) Draw and explain the structure of a human cell.

3. a) Explain half cell potential and give its significance.
b) Explain in detail with neat diagrams the external electrodes used in biomedical applications.

4. a) Explain the Standard lead configuration of ECG in detail with Einthoven's explanation.
b) List the advantages and disadvantages of indirect method of measurement of blood pressure measurement.

5. a) Discuss about electrode placement for EMG recording.
b) List out the specifications of EEG machine.

6. a) With a neat diagram, explain about a defibrillator.
b) Discuss about Haemodialysis machine.

7. Describe the various lung volumes and capacities and explain the various techniques used in lung volume measurements.

8. a) Explain Ultra Sonography modes with neat diagrams.
b) Discuss the method of computed radiography.

CODE No.:10BT61201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Briefly explain;
i) Object ii) Attributes iii) Methods iv) Classes
b) Explain about the architecture of a Software Intensive Model.

2. a) Enumerate the steps to model the vocabulary of a system.
b) Enumerate the steps to model different levels of abstraction.

3. a) Distinguish between forward and reverse engineering.
b) Enumerate the steps involved in reverse engineering of an object diagram.
c) What criteria should be followed while generating the class diagram?

4. a) Discuss about Activity diagrams.
b) Give the Usecase modeling for Library Management system.

5. a) Write notes on Sequence and collaboration diagrams.
b) Explain about various steps involved to model system architecture.
c) Differentiate between System design and Detail design.

6. a) Explain the State Chart template with an example.
b) Explain interprocess communication in advanced behavioral modeling.

7. a) What are the common uses of a component diagram?
b) Write short notes on Application Programming Interface.

8. Draw and Explain the following diagram for point of sales system.
a) Sequence diagram
b) Usecase diagram

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

COMPUTER NETWORKS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Compare all the layers of OSI reference model with TCP/IP reference model.

2. Differentiate guided and unguided media with examples.

3. Discuss in detail about sliding window protocol with error handling.

4. Discuss in detail about CSMS/CD and explain its efficiency calculation.

5. a) Differentiate between Broadcast and Multicast.
b) Write short notes on IPV6.

6. a) Explain how UDP supports CRC encoding process.
b) Briefly explain usage of different flags in TCP header.

7. a) What is Domain name system? Illustrate the process of converting domain name to IP address in domain name system.
b) Briefly discuss on dynamic web documents in World Wide Web.

8. Define the term cryptography and explain different types of cryptographic algorithms.

CODE No.:10BT61501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

MODELING AND SIMULATION

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Describe different distributions used in evaluating the computer systems.

2. a) Explain about the various types of Stochastic Processes.
b) Explain about any two Operational Laws with an example.

3. a) Explain the work load components with examples and also write the techniques that are used for work load characterization.
b) Explain how Markov models are useful in queuing analysis.

4. a) Describe the issues in software monitor design.
b) Compare Software *vs.* Hardware monitor.

5. a) Explain with flow chart about Selecting the Index of Dispersion.
b) Write shot notes on Hypothesis testing *vs*. Confidence Intervals.

6. a) Explain about the general 2^k Factorial Design.
b) How to Prepare the Sign table for 2^{k-p} Design? Explain.

7. a) Explain the generation of Pseudo-Random numbers with an example.
b) Discuss about the combined linear congruential generator for random number.

8. What are the different types of Simulations and how to verify and validate a simulation model?

CODE No.:10BT62301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

BIOINFORMATICS

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Define Bioinformatics and discuss role of internet in Bioinformatics.

2. Comment on homology with special reference to Alfred Russell Wallace.

3. Explain linkage analysis.

4. Describe about the Smith-Watermann algorithm.

5. Explain organization and management of EMBL.

6. Write a short note on:
   a) FASTA
   b) BLAST

7. Write a short note on:
   a) BRENDA
   b) WIT

8. What is MULTIPLE sequence alignment and how this can be implicated in phylogenetic tree constructions.

CODE No.:10BT62303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ENZYME ENGINEERING

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Discuss enzyme classification in terms of four digit classification number.

2. Write in detail about development of enzymatic assays.

3. Describe the experimental determination of Michealis Menten parameters by double reciprocal plot.

4. Explain in detail the comparison of substrate inhibited and uninhibited enzyme kinetics.

5. Explain the advantages and disadvantages of enzyme immobilization.

6. How do you interpret the batch reactor data to obtain the kinetics of a reaction? Explain integral method of analysis using first-order irreversible reaction as an Example.

7. Explain the design of fluidized bed enzyme reactor.

8. Describe the application of enzyme in analysis.

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

WEB PROGRAMMING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write a sample Frameset to display two pages at the same time.
b) Describe the different ways that styles can be added to a page.

2. a) Write a JavaScript program that generates 10 random math problems. Each math problems should consists of three operands (random integers between -10 and 10, inclusive) and two operators (randomly from +,-,*, /, and %). For example, a problem might be -4+7%3. Display each problem in a prompt box, and allow the user to enter an integer representing the value of the problem (following standard JavaScript operator precedence rules). After all ten problems have been answered; output the number of correct answers.
b) Write a JavaScript function drawGrid() that takes a two dimensional array as its sole argument. Your function should produce an alert box displays the array with grid lines separating the elements.

3. What is DOM? What are the benefits of using DOM? Write XML document for Messaging application and Generate DOM tree for that XML documentation.

4. a) Explain any six interfaces from javax.servlet package.
b) How to read cookies from Servlet? Explain.

5. a) What two packages contain the JDBC classes and interfaces? Explain.
b) How to establish a JDBC connection? Explain with an example code.

6. a) Describe various scripting elements in JSP.
b) Describe the Debugging process in JSP.

7. Write a program to read Username, Email and DOB details from the form and display using Java Bean.

8. How to integrate the JSP Standard Tag Library into user defined JSP page? Explain with an example.

CODE No.:10BT71204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

CRYPTOGRAPHY AND NETWORK SECURITY

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the general model that reflects a concern for protecting an information system from unwanted access.
b) Explain the working of poly alphabetic substitution cipher with an example.

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) Consider a Diffie-Hellman Scheme with a common prime q=11 and a primitive root α=2
i) If user A has public key YA=9, What is A's private key XA?
ii) If user B has public key YB=3, What is the shared secret key K?
b) Explain X.509 3-way Authentication procedure.

4. a) Explain the importance of MIME and S/MIME.
b) Explain about PGP key management.

5. a) What are the various ways of combining security associations?
b) Explain about ISAKMP.

6. Explain about Secure Electronic Transaction.

7. a) Explain USM message processing with the help of flowcharts for message transmission and message reception.
b) Explain in detail the password selection strategies.

8. a) What is a firewall and mention four limitations of firewall. ?
b) Explain about circuit level gateway firewall.

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

PROBABILITY AND STATISTICS

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) In a factory, machine A produces 40% of the output and machine B produces 60%. On the average, 9 items in 1000 produced by A are defective and 1 item in 250 produced by B is defective. An item drawn at random from a day's output is defective. What is the probability that it was produced by A or B?

b) Probability density function of a random variable X is

$$f(x) = \begin{cases} \frac{1}{2}\sin x, & 0 \le x \le \pi \\ 0, & elsewhere \end{cases}$$

Find the mean, variance and the probability between 0 and $\frac{\pi}{2}$.

2. a) A student takes a 10-question multiple choice test purely by guessing. If there are 5 choices for each question, what is the probability of his obtaining 6 or more correct answers?

b) A study finds that the time spent on commercials per hour on a certain radio station is approximately normally distributed with mean $\mu = 12.8$ minutes and standard deviation $\sigma = 2.4$ minutes were devoted to commercials.

3. a) Ten competitors in a beauty contest are 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 has the nearest approach to common tastes of beauty.

b) From the following data, obtain two regression equations:

X	6	2	10	4	8
Y	9	11	5	8	7

4. a) Measurements of the diameters of random sample of 200 ball bearings made by a certain machine during one week showed a mean of 0.824 inches and SD of 0.042 inches. Find the standard error of the mean.

b) Explain the following terms with examples
i) Type I and Type II errors ii) Level of significance iii) Degrees of freedom

5. a) A cereal company claims that two-third of all children prefer Rice Crunchies to Rice Flakies. In a sample of 100 children, 55 prefer Rice Crunchies. Test if the company's claim is overstated at the $\alpha = 0.05$ level of significance.

b) A study is made comparing wages paid to women and men holding comparable jobs in a large company. A random sample of 100 women are paid a mean hourly wage of \$7.23 with a standard deviation of \$1.64 while a random sample of 75 men are paid a mean hourly wage of \$8.06 with a standard deviation of \$1.85. Do these data constitute "proof" that, on the average, women are paid less than men at the 5% level of significance?

6. a) In Mendel's experiments with peas, he observed, 315 were round and yellow, 108 were round and green, 101 were wrinkled and yellow, and 32 were wrinkled and green. According to his theory of heredity, the numbers should be in the proportion 9:3:3:1. Is there any evidence to doubt his theory at a 0.05 level of significance?

b) In the past, a machine had produced washers having a mean thickness of 0.050 inch. To determine whether the machine is in proper working order, a sample of 10 washers is chosen for which the mean thickness is 0.053 inch and the standard deviation is 0.003 inch. Test the hypothesis that the machine is in proper working order using a 0.01 level of significance.

7. a) The following are the sample means and ranges for 10 samples each of size 5. Construct the control chart for mean and range. Comment on the nature of control.

Sample No.:	1	2	3	4	5	6	7	8	9	10
Mean :	12.8	13.1	13.5	12.9	13.2	14.1	12.1	15.5	13.9	14.2
Range :	2.1	3.1	3.9	2.1	1.9	3.0	2.5	2.8	2.5	2.0

b) The following data give the number of defects found in 30 pieces of cotton goods inspected every day in a month

Defects: 1, 3, 8, 2, 1, 10, 0, 16, 1, 12, 5, 8, 9, 3, 6, 8, 14, 2, 7, 1, 4, 6, 20, 19, 5, 1, 6, 1, 7, 1.

Can you say that these data come from a controlled process?

8. In a railway marshalling yard, goods trains arrive at a rate of 30 trains per day. Assuming that the inter-arrival time follows an exponential distribution and the service time is also exponential with an average 36 minutes. Calculate the following

i) The mean queue size(line length).
ii) The average number of trains in the queue.
iii) The probability that the queue size exceeds 10.
iv) If the input of trains increases to an average 33 per day, what will be the change in (i) and (ii).

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

ENVIRONMENTAL SCIENCES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the role of important national and international individuals and organizations in promoting environmentalism.
b) Write a short note on atmosphere, hydrosphere and lithosphere.

2. Write note on the following
a) Indoor air pollution b) Photochemical smog

3. a) Discuss the fertilizers and pesticides effects on agriculture.
b) Explain the need of renewable energy.

4. a) Write a brief note on the protected areas of India and mention causes for loss of Biodiversity.
b) Write an essay on Endemic and Endangered species of Seshachalam hills.

5. a) Write a detailed note on tsunamis.
b) What are the causes, adverse effects and control measures of air pollution?

6. a) Explain in detail about green technology.
b) What are the causes and effects of ozone layer depletion?

7. a) Describe the effects of population explosion and its impact on environment.
b) What are the steps to be taken through National Health Policy to prevent infectious diseases like HIV, TB etc?

8. a) Discuss the population explosion on Indian environment.
b) What is meant by occupational health hazard? Explain with suitable examples.

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

OPTIMIZATION TECHNIQUES

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. With suitable examples explain:
a) Design vector and Design constraints.
b) Contours of the objective functions.

2. Solve the following non-linear programming problem using Lagrange multipliers technique:
Minimize $Z = x_1^2 + x_2^2 + x_3^2$
Subject to $x_1 + x_2 + x_3 = 2$
$5x_1 + 2x_2 + x_3 = 5$
$x_1, x_2, x_3 \geq 0$

3. Solve the given problem using simplex method. Maximize $Z = X_1 + 2X_2$ Subjected to
$2x_2 \leq 7$
$x_1 + x_2 \leq 7$
$2x_1 \leq 11$
$x_1, x_2 \geq 0$

4. Solve the following assignment problem

	1	**2**	**3**	**4**	**5**
A	10	3	3	2	8
B	9	7	8	2	7
C	7	5	6	2	4
D	3	5	8	2	4
E	9	10	9	6	10

5. Solve the minimization f(x) = (x-1)(x-2)(x-3) in the interval [1,3] by Fibonacci method.

6. Minimize $f = 2x_1^2 + x_2^2$ by using the steepest descent method with the starting point (1, 2) (two iterations only).

7. Explain penalty function technique with a suitable example. Mention the applications of the same.

8. a) Explain the differences in forward recursion and backward recursion.
b) A manufacturing company has a demand of 3 units per period. The production cost consists of setup cost of Rs. 13 and variable unit cost of Rs. 2 per item. The company can not produce more than 5 units in a period and hold more than 4 units at the end of the period. The company wants to decide how much to produce in each period so that total cost is minimizes. A planning horizon of 3 periods is being considered. No final inventory is desired. Making necessary assumption, formulate this problem as a dynamic programming problem and suggest a production strategy for various initial entering inventory levels.

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CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

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

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

Answer any FIVE questions
All questions carry equal marks

1. Define law of demand with the help of illustration.

2. Explain the following:
a) Opportunity Vs Outlay costs
b) Explicit Vs Implicit costs

3. Discuss the various types of markets.

4. Explain briefly new economic policy 1991.

5. Journalize the following transactions and post them into ledger accounts of Mr. Prakash for the month of December, 2011

Dec. 1	started business with Rs. 1,00,000 in the bank and Rs. 50,000 in cash
Dec. 2	bought furniture for shop Rs. 25,000 and Motorcycle Rs. 60,000, both paid by cheque.
Dec. 3	paid rent by cheque Rs. 2,000
Dec. 4	bought goods for resale on credit from Madhavi Rs. 50,000
Dec. 5	Cash Sales Rs. 10,000
Dec. 6	Paid insurance by cheque Rs. 1,000
Dec. 7	Cash Sales Rs. 10,000
Dec. 8	Goods returned to Madhavi Rs. Rs. 5,000
Dec. 12	Paid Madhavi by cheque Rs. 20,000
Dec. 13	Cash Sales Rs. 5,000
Dec. 16	Bought stationery, paid in cash Rs. 1,000
Dec. 18	Bought goods for resale on credit from Rao & Co. Rs. 35,000
Dec. 22	Paid Rao & Co Rs. 15,000 by cheque
Dec. 23	Paid wages to assistant in cash Rs. 1,000
Dec. 29	Paid into Bank Rs. 25,000

6. From the following trial balance of Mr. Ashok, prepare trading, profit and loss account and balance sheet as on 31st December 2013.

Debit Balance	Rs.	Credit Balance	Rs.
Bills Receivable	3,000	Capital	10,000
Furniture	600	Bank loan (at 5%)	2,000
Drawings	1,400	Sales	15,000
Cash in hand	1,500	Returns	2,000
Purchases	12,000	Bad debt provision	1,000
Stock (1-1-2011)	3,000	Creditors	1,850
Investment	4,000	Commission	650
Debtors	5,000	Bills payable	2,500
Bad debts	500		
Taxes, Insurance	500		
Establishment charges	2,500		
Returns	1000		
	35,000		**35,000**

Adjustments:

a) Outstanding expenses
   i) establishment expenses Rs. 250;
   ii) Taxes Rs. 500 and iii) 3 months interest on Bank loan.
b) Prepaid insurance Rs. 100.
c) Commission received in advance Rs. 150.
d) Interest accrued on investment Rs. 100.
e) Bad debt provision 10 per cent on debtors.
f) Depreciate: Furniture at 5 per cent.
g) Closing stock Rs. 4,500.

7. M/s. Pandey Ltd. is contemplating to purchase machine A & B each costing of Rs 5 Lakhs. Profits are expected as follows

Year	Cash Inflows	
	Machine A (Rs.)	Machine B (Rs.)
1	150,000	50,000
2	200,000	150,000
3	250,000	200,000
4	150,000	300,000
5	100,000	200,000

Using 10% discount rate indicates which machine would be profitable using the NPV method.

8. Explain the advantages and disadvantages of computerized accounting.

CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

COMPUTER ARCHITECTURE AND ORGANIZATION

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the interconnection structure of a computer.
b) Explain the implementation for signed magnitude addition and subtraction.

2. a) An 8-bit register contains the binary value 10011100. What is the register value after an arithmetic shift right? Starting from the initial number 10011100 determine the register value after an arithmetic shift left and state there is an over flow.
b) Explain different types of Addressing modes with suitable examples.

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) What is parallel processing? Explain Flynn's classification of computer.
b) Explain data hazards in pipelining.

5. a) What are the advantages of DMA? Explain BUS arbitration.
b) Write short notes on asynchronous data transfer.

6. a) Explain about Input-Output processor (IOP).
b) Explain about RS232.

7. a) Describe the various characteristics of multiprocessors.
b) What is cache coherence? Explain.

8. Write about power PC architecture

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

CONTROL SYSTEMS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the advantages of closed loop control systems over open loop control systems.

2. Determine the transfer function of block diagram shown in Fig.1 using signal flow graph technique.

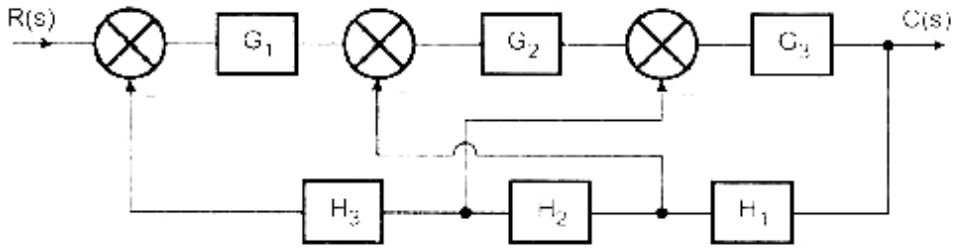

Fig.1

3.

a) A unity positive feedback control system has the plant $G(s) = \dfrac{k}{s(s+\sqrt{2k})}$. Find the rise time, percentage overshoot, peak time and settling time for a unit step input. For what range of k is the settling time less than 1 second?

b) Explain the effect of proportional, integral and Derivative control on the closed loop system.

4.

a) A feedback system has open loop transfer function of $G(s) = \dfrac{ke^{-s}}{s(s^2+5s+9)}$

Determine the maximum value of K for stability of closed loop system.

b) Define the terms : i) Absolute stability ii) Marginal stability iii) Conditional stability

5. a) Sketch the magnitude and phase Bode plots and comment upon stability if

$$G(s) = \frac{10}{s(1+0.5s)(1+0.05s)}$$

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 Fig 2. Peak resonance(M_r)=1.04 and Resonant frequency (ω_r)=11.55 rad/sec.

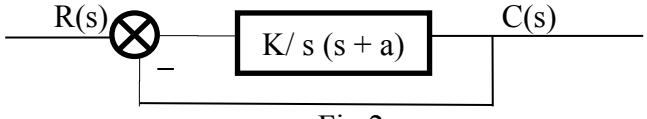

Fig 2

7. a) What is the basis for the selection of a particular compensation?

b) Explain the procedure to design a log compensator in frequency domain.

8. Given the transfer function: $G(s) = \dfrac{2}{(s+12)^2} + \dfrac{4}{(s+20)} + \dfrac{3}{s+1}$. Write the state transition matrix.

CODE No.:10BT50101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

STRUCTURAL ANALYSIS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. What is EUDL? Determine the same when the load system shown in Fig.1, crosses a simply supported beam of span 25m. 10t load is the leading one.

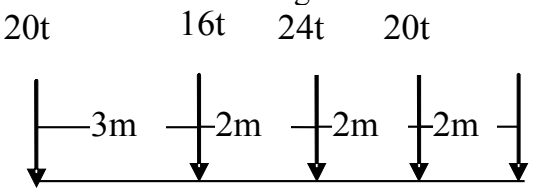

Fig.1

Fig.1

2. Sketch the ILD for support reactions, BM at fixed support, reaction at C and shear force at Location D, of the articulated beam shown in Fig.2. There is an internal hinge at B. AB=4m; BD=3m; DC=2m and CE=3m.

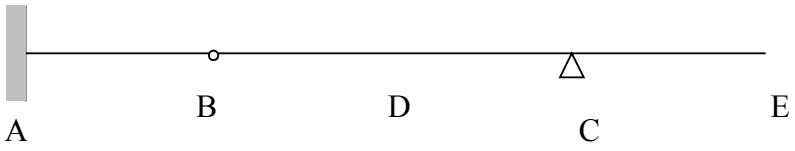

Fig.2

3. Analyse the continuous beam shown in Fig.3 using Moment distribution method, and draw shear force and bending moment diagrams. Locate and find the distances of the points of contra-flexure from supports. Draw elastic curve.

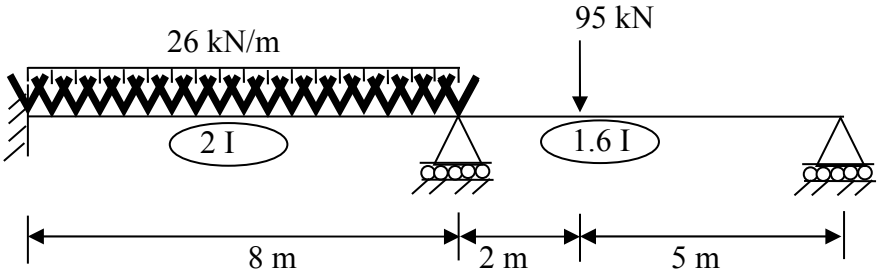

Fig.3

4. Analyse the continuous beam shown in Fig.4 by slope deflection method and draw the B.M diagram. Flexural rigidity is constant throughout.

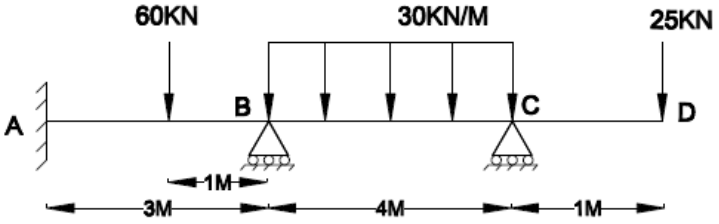

Fig.4

5. Analyse the continuous beam shown in Fig.5 using Kani's method.

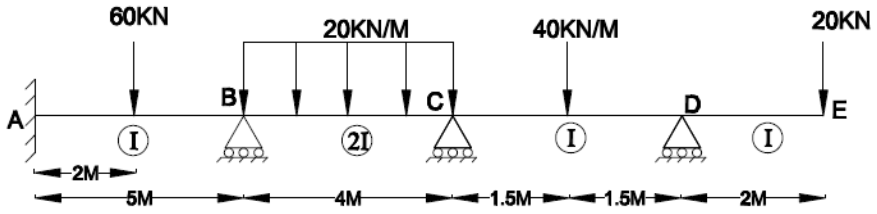

Fig.5

6. Sketch the BMD of the frame shown in Fig.6, use Kanis method. AB=10m; BC=6m; and CD = 10m. UDL is 30kN/m. EI of members is same.

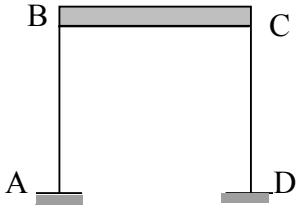

Fig.3

Fig.6

7. Analyse the truss shown in Fig.7. Determine the forces in all the members. AE is constant

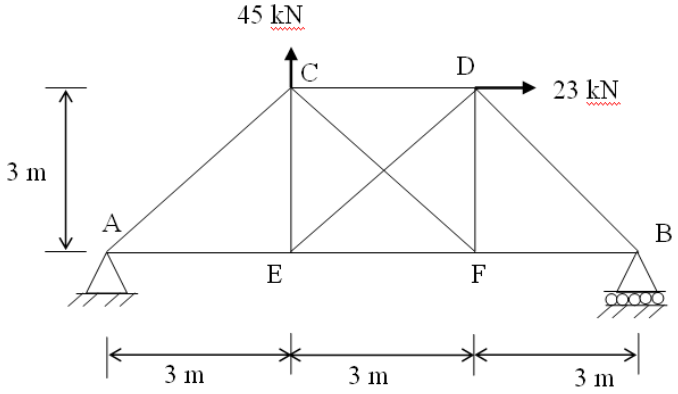

Fig.7

8. Analyse the frame shown in Fig.8 using Portal method. Draw the bending moment diagram and sketch elastic curve. Cross-sectional area of all columns is equal.

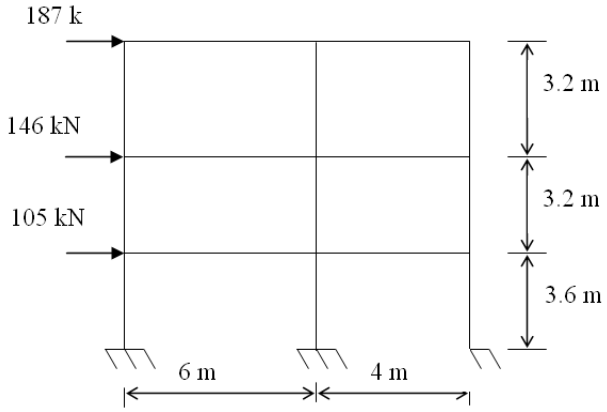

Fig.8

CODE No.:10BT50102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

REINFORCED CEMENT CONCRETE STRUCTURES - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Design the waist slab type staircase consisting of a straight flight of stairs resting on two stringer beams along the two sides. Assume the span of the slab as 2m with risers of 160mm and treads of 270mm. Live load is 3 kN/m^2. Adopt M20 grade concrete and Fe 415 grade steel.

2. Design a reinforced concrete combined rectangular slab footing for two columns located at 3.5 m apart. The over all sizes of columns are 300 × 300 mm and 500 × 500 mm and they are transferring 1200 and 1500 kN respectively. The space width of the footing is restricted to 1.80 metre. The safe bearing capacity of the soil is 250 kN/m^2. Use M20 concrete, and Fe 415 steel. Sketch the reinforcement details.

3. Design an under reamed pile foundation when the vertical load of 180 kN is being transmitted from the column. The soil is silty and close to ground water table. Use standard specifications for grades of steel and concrete.

4. Design a counterfort retaining wall to support a level backfill, 8 m high above the ground level on the toe side. Assume the foundation at a depth of 1.5 m below the ground level with a safe bearing capacity of 175 kN/m^3. The backfill consists of granular soil with unit weight of 16 kN/m^2 and the angle of internal friction is 30^0. The coefficient of friction between the soil and the retaining wall is 0.5. Adopt M 20 grade of concrete and Fe 415 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. An RCC circular tank is resting on ground firmly has to carry a capacity 350kL. Design the tank if the walls are rigidity fixed to the base.

7. A beam circular in plan is loaded with uniform load of 100kN/m inclusive of self weight. The radius of the beam is 4m. The beam is supported by six symmetrically placed columns. Design the beam using M30 grade concrete. Sketch the detail of reinforcement.

8. a) Explain the basic principles of prestressing.
b) A rectangular prestressed concrete beam 230 mm × 400 mm is prestresssed with a force of 750 kN applied at an eccentricity of 100 mm from the C.G.of the section. The span of the beam is 10 m. The beam carries an imposed load of 25 KN/m. Find the initial and final stresses at the top and the bottom of the section. Assume the losses 15%.

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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/Supplementary Examinations January - 2014

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.
b) What are the various weather seasons of India? Explain briefly.

2. a) Explain any one type of automatic rain range.
b) Describe various methods of computing average rainfall over a basin.

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) Explain the various climatic factors affecting runoff.
b) What is a flow mass curve? Explain how it is constructed.

5. a) What is a hydrograph? Draw a single peaked hydrograph and explain its components.
b) Compute the ordinates of a storm hydrograph resulting from a 4 hour storm with rainfall of 40mm. The ordinates of 4 hour unit hydrograph are given below:

Hours	**3**	**6**	**9**	**12**	**15**	**18**	**21**	**24**	**3**	**6**	**9**	**12**	**15**	**18**	**21**	**24**
Ordinates of unit hydrograph (cumec)	**0**	**115**	**370**	**505**	**395**	**315**	**255**	**240**	**180**	**135**	**100**	**70**	**45**	**25**	**15**	**0**

Assume an initial loss of 5mm and infiltration index 2.5mm/hour. Base flow is 15 cumec.

6. a) Discuss different phases of runoff. Explain the factors affecting the magnitude of 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. What is the runoff coefficient of the catchment?

7. a) Discuss the significance of stream gauging. Explain the procedure of stream flow measurement by area-velocity method.

b) The following are observed flows from a storm of 3hr duration on a stream:

Time (Hrs):	**00.00**	**06.00**	**12.00**	**18.00**	**00.00**	**06.00**	**12.00**
Flow (Cumec):	**20.00**	**122.9**	**265.4**	**200.8**	**157.2**	**120.9**	**95.4**

Time (hrs)	**18.00**	**00.00**	**06.00**	**12.00**	**18.00**	**00.00**	**06.00**	**12.00**
Flow (cumec)	**75.4**	**57.3**	**45.7**	**35.3**	**27.8**	**24.1**	**23.4**	**20.00**

Assuming a constant base flow of 20.00 cumec, derive a 3 hr UH. The area of the drainage basin is 215 sq.km.

8. a) In an artesian aquifer of 8 m. thick, a 10 cm diameter well is pumped at a constant rate of 100 lit/minute. The steady state drawdown observed in two wells located at 10m and 50 m distance from the centre of the well are 3 m and 0.05 m respectively, compute the transmissivity and the hydraulic conductivity of the aquifer.

b) Develop the equation relating the steady state discharge from a well in an unconfined aquifer and depths of water table at two known positions form the well. State clearly all the assumptions involved in your derivation.

CODE No.:10BT50104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

SOIL MECHANICS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is a transported soil? How soils are classified based on transportation agent? Give two examples for each category.

b) A fully saturated soil sample was extracted during an oil well drilling. The wet mass of the sample was 3.15 kg and the volume of the sampling tube was 0.001664 m^3. After analysis the soil sample was found to contain 28.2% of the liquid as kerosene and the dry mass as 2.67 kg. The specific gravity of soil grains was 2.68. Determine the bulk density, void ratio and water content of the sample.

2. a) Explain the salient features of Indian Standard Classification system.

b) The Atterberg limits of a clay sample are, liquid limit = 60%, plastic limit = 45% and natural moisture content = 50%.
Determine i) liquidity index ii) consistency index iii) plasticity index.

3. a) Discuss the factors affecting the permeability of soils. State the limitations of Darcy's law.

b) The sub soil at a site consists of a fine sand layer lying in between a clay layer at top and a silt layer at bottom. The coefficient of permeability of the sand is 100 times that of clay and 20 times that of silt while the thickness of the sand layer is one-tenth that of clay and one-third that of silt. Find out the equivalent coefficient of permeability of the deposit in directions parallel and perpendicular to the bedding planes in terms of the coefficient of the clay layer.

4. a) What is quick sand condition? Derive the expression for the same.

b) A sand deposit consists of two layers. The top layer is 2.5 m thick with unit weigh 18 kN/m^3 and the bottom layer is 3.5 m thick with saturated unit weight 21 kN/m^3. The water table is at a depth of 3.5 m from the surface and the zone of capillary saturation is 1 m above the water table. Draw the total pressure, neutral pressure and effective pressure variation diagrams.

5. a) Explain how Newmark's influence chart is constructed and how it is used to find the vertical stress at a point below the ground surface.

b) A concentrated load of 100 kN is applied at the ground surface. Compute the vertical pressure. (i) At a depth of 4m below the load. (ii) At a distance of 3m at the same depth use Boussinesq's equation.

6. a) Write a short notes on compaction specifications and methods of exercising quality control in the field.

b) The following observations are made from an I.S. light compaction test.

Weight of soil in Kg	1.68	1.85	1.91	1.87	1.87	1.84
Water content %	12	14	16	18	20	22

Plot compaction curve and determine OMC and MOD if the volume of the mould is 1000 CC. Also plot zero-air-void line.

7. a) Distinguish between normally consolidated and over consolidated soil. Also describe the method of determining the preconsolidation pressure.

b) A saturated clay layer is 10 m thick underlain by an impervious stratum. The natural water content of clay is 40% and its liquid limit is 48%. What will be the consolidation settlement of clay if the foundation load increases the vertical pressure by 50% of its initial overburden pressure? The clay is normally consolidated and the specific gravity of clay is 2.70.

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.:10BT50105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

ENGINEERING GEOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Write weathering processes and its importance in Dams and reservoirs.

2. Write physical properties of the following
a) Biotite b) Bauxite c) Hornblende

3. Write about origin, different texture and structures of sedimentary rocks. Write any two major monuments constructed with sedimentary rocks in India.

4. What are the folds and how are they caused? Describe different types of folds with neat sketches. Add a note on their significance in civil engineering.

5. Write about two important seismic reflection and refraction technique procedures and its applications in Civil Engineering.

6. State the importance of geophysical methods in subsurface exploration and detail the procedure of magnetic method with its principle.

7. Define and differentiate gravity dam and arch dam. Describe in detail the ideal geological conditions for selection of a suitable site for a gravity dam with neat sketches.

8. Write about different types of tunnels and differentiate between traffic and pressure tunnel.

CODE No.:10BT50201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

POWER ELECTRONICS

[Electrical and Electronics Engineering]

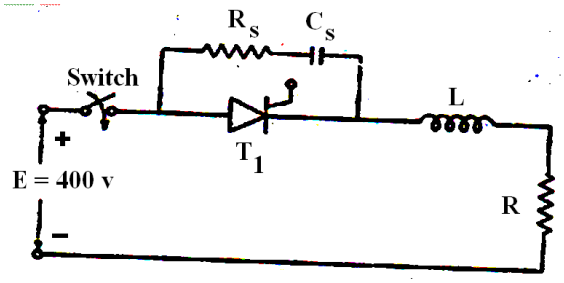
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the switching characteristics of power MOSFETs.
b) Compare the features of Power MOSFETs with BJTs.

2. a) Draw and explain the equivalent circuit and V-I characteristics of the UJT in detail.
b) With the help of circuit diagram and waveforms, explain the operation of resistance-capacitance firing circuit.

3. a) What do you mean by Snubber circuit? Draw and explain the function of each component.
b) The SCR in the following figure is used to control power in resistance 'R'. .The supply is 400V, and the maximum allowable di/dt and dv/dt of the SCR are 50 A/μ sec and 200 V/ μ sec, respectively. Compute the values of the 'di/dt' inductor and the Snubber circuit components $\mathbf{R_s}$ and $\mathbf{C_s}$.



4. Explain the operation of a single-phase fully-controlled converter with RLE load and derive the expression for average output voltage and current.

5. a) Explain the operation of single phase fully controlled bridge converter feeding RL load with the help of wave forms. Derive the expression for load voltages. Draw the waveforms for $\alpha=30^0$.
b) Compare the advantages of 3-phase converter over the single -phase converter.

6. a) Explain the various triggering modes of a TRIAC. Compare their sensitivity.
b) For a 1-ϕ ac regulator feeding R-L load, obtain the expression for RMS output voltage.

7. a) Explain the operation of Jones chopper with neat waveforms.
b) A load commutated chopper, fed from 230V D.C source has a constant load current of 50A. For a duty cycle of 0.4 and a chopping frequency of 2 KHz calculate,
i) The value of commutating capacitance
ii) Average output voltage
iii) Circuit turn off time for one SCR pair.
iv) Total commutation interval

8. a) What are the different pulse width modulation techniques used for inverter?
b) Which of the pulse width modulation techniques gives better quality of voltage and current? Explain in detail.

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CODE No.:10BT50202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

AC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is an alternator? Explain the principle of operation of an alternator.
b) Calculate the EMF of a 4 pole, 3 Phase star connected alternator running at 1500 rpm from the following data. Flux per pole = 0.1 Wb, Number of slots = 48, Conductors per slot = 4 and coil-span= 150^0.

2. a) Name the factors responsible for making terminal voltage of an alternator less than induced voltage. Explain them.
b) Describe what a synchronous reactance is? Explain the method to determine X_S.

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. The identical 2 MVA alternators operate in parallel. The governor of first machine is such that the frequency drops uniformly from 50 Hz on no load to 47.5 Hz on full load. The corresponding uniform speed drop of the second machine is 50 Hz to 48 Hz. How will they share a load of 3MW and 6 MW.

5. a) Explain the sequence of events which take place when the load on the synchronous motor if changed. What is hunting? How can it be avoided?
b) A 50Hz, 3-phase, 100 hp, 440 V, 1000 rpm synchronous motor has a star connected stator. At full load the line current is 106 A at unity p.f. The armature impedance is (0.09+j2.25) ohms per phase. Find (i) generated emf per phase, (ii) torque angle.

6. a) Explain the construction and working principle of single phase induction motor.
b) Draw and explain the torque-slip characteristics of shaded pole induction motor.

7. a) Discuss the various methods of speed control of universal motor.
b) Explain why a series motor never be operated on no-load? List the applications of AC series motor.

8. a) Explain the construction and working principle of a stepper motor.
b) The resistance and total impedance of a 1-φ fractional horse power series motor are 30Ω and 0.5 H respectively. It draws 0.8 A current and runs at 2000 rpm when connected to a 250 v DC supply. Calculate the speed and power factor when connected to a 250 v, 50 Hz supply and takes the same load current.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

ELECTRICAL POWER TRANSMISSION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the meaning of self-GMD and mutual - GMD.
b) What do you understand by transposition of conductor? Two conductors of a single-phase linen, each of 2 cm diameter, are arranged in a vertical plane with one conductor mounted 1 m above the other. A second identical line is mounted at the same height as the first and spaced horizontally 0.25m apart from it. The two upper and two lower conductors are connected in parallel. Determine the inductance per km of the resulting double-circuit line.

2. A conductor is composed of seven identical copper strands, each having a radius r, find the self GMD of the conductor.

3. Draw the phasor diagrams and derive the expressions for short transmission line for sending end voltage and sending end current. Also derive voltage regulation at lagging current and zero regulation condition.

4. a) Explain the variation of current and voltage on an overhead line when one end of line is i) Short-circuited, and ii) open-circuited and at the other end a source of constant e.m.f. V is switched in.
b) Determine the relative attenuation occurring in two cycles in the over voltage surge set up on a 132kV cable fed through an air blast breaker when the breaker opens on a system short circuit. The breaker uses critical resistance switching. The network parameters are R = 10 ohms, L = 8mH and C = 0.08μF.

5. a) What are the advantages of per-unit system of representation? Explain
b) Describe the Symmetrical component transformation.

6. a) State the characteristics which the line supports (poles and towers) should possess and describe briefly Wooden pole and R.C.C poles.
b) How are the transmission line insulators classified and explain any two of them?

7. Prove that the overhead line has form catenary curve.

8. a) Discuss the qualities of the dielectrics used for cables insulation must have. Also name three dielectrics with their properties used in the manufacture of underground cables.
b) A single-core lead sheathed cable is graded by using three dielectrics of relative permitivities 5, 4 and 3 respectively. The conductor diameter is 2 cm and overall diameter is 8 cm. if the three dielectrics are worked at the same maximum stress of 40kV/cm. Find the safe working voltage of the cable and what will be the value of safe working voltage for underground cable, assuming the same conductor and overall diameter and the maximum dielectric stress.

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CODE No.:10BT50301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations January - 2014

THERMAL ENGINEERING - II

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) In a steam turbine steam at 20 bar and 360^0C is expanded to 0.08 bar. It then enters a condenser where it is condensed to saturated liquid water. The pump feeds back the water into the boiler. Assuming ideal processes, find the net work per kg of steam and the cycle efficiency.

b) What do you mean by binary vapour cycle? State the advantages of mercury as a working fluid.

2. a) Explain the different types of boiler mountings used in boilers with line diagrams and what are their functions.

b) A chimney of height 30 meters discharging hot gases at a temperature 360°C when the outside air temperature is 23°C.The air supplied at rate of 16 kg/kg of coal. Determine

i) The draught in mm of water column
ii) The draught produced in terms of column of flue gas
iii) Volume of hot gas passing through chimney per second if coal burnt is 1400 kg per hour.
iv) The base diameter if velocity of chimney is given in relation $h= 16 V^2 / 2 g$. where h is a equivalent height of column of hot gas.

3. a) Define the term 'steam nozzle'. Explain various types of nozzles.

b) Derive an expression for the steam discharged through nozzle.

4. In a De- Laval turbine steam enters at a pressure of 15 bar and 250^0 C. The back pressure is 0.12 bar. Given that, co-efficient of nozzle = 0.9, blade velocity co-efficient = 0.8, mechanical efficiency = 90%, nozzle angle = 20^0 and the blades are symmetrical with an angle of 30^0. Draw the velocity diagram and calculate:

b) speed , if the mean diameter of the wheel is 75 cm
ii) steam consumption per kWh
iii) blade efficiency
iv) stage efficiency and
v) axial thrust per kg.

5. a) Write a short note on ‘bleeding of steam turbines’.

b) Explain the State point locus and reheat factor.

6. a) What factors contribute to loss of efficiency in the steam condensers? Explain.

b) Exhaust steam having a dryness fraction of 0.82 enters a surface condenser where the vacuum is 690 mm of Hg and is condensed to water at 34.8°C. The temperature of the hot well is 31.6°C. The circulating water enters the condenser at 14^0C and leaves at 34°C. The barometric pressure is 756 mm of Hg, calculate

i) the mass of circulating water required per kg of steam, and

ii) the mass of air extracted per m^3 of condenser volume.

7. a) Explain the Closed Cycle Gas Turbine with the help of neat sketch.

b) In a gas turbine power plant, operating on a Joule cycle, air is compressed from 1 bar and 15°C through a pressure ratio of 6. It is then heated to727^0C in a combustion chamber and expanded back to a pressure of 1 bar. Calculate the work done, cycle efficiency and work ratio. Assume isentropic efficiencies of the turbine and compressor as 90% and 85% respectively.

8. a) Explain turbo jet working with neat diagram. Write down advantages & disadvantages of turbo jet engines.

b) The following data pertains to a turbo jet flying at an altitude of 9500 m speed of the turbo jet = 800 km/h; Propulsive efficiency = 55%; Overall efficiency of the turbine plant = 17%; Drag on the plane = 6100 N; density of air at 9500m altitude = 0.17 kg/m^3 ; Assuming calorific value of the fuels used as 46000 kJ/kg. Calculate:

i) Absolute velocity of the jet.

ii) Volume of air compressed per min.

iii) Diameter of the jet.

iv) Power output of the unit.

v) Air fuel ratio.

CODE No.:10BT50302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations January - 2014

DYNAMICS OF MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and explain D' Alembert's principle.
b) The effective steam pressure on the piston of a vertical steam engine is 200 KN/m^2 when the crank is 40° from the inner-dead center on the down stroke. The crank length is 300mm and connecting rod length 1200mm. The diameter of the cylinder is 800mm. what will be the torque on the crankshaft if the engine speed is 300rpm and the mass of the reciprocating parts 250kg?

2. a) What is the gyroscopic effect on pitching and rolling of ship?
b) The rotor of a turbine installed in a boat with its axis along the longitudinal axis of the boat makes 1500 rpm clockwise when viewed from the stern. The rotor has a mass of 750kg and a radius of gyration of 300mm. if at an instant, the boat pitches in the longitudinal vertical plane so that the bow rises from the horizontal plane with an angular velocity of 1 rad/sec. determine the torque acting on the boat and the direction in which it tends to turn the boat at the instant.

3. A band and block brake, having 14 blocks each of which subtends an angle of 15° at the centre, is applied to a drum of 1 m effective diameter. The drum and flywheel mounted on the same shaft of mass 2000 kg and a combined radius of gyration of 500 mm. The two ends of the band are attached to pins on opposite sides of the brake lever at distances of 30 mm and 120 mm from the fulcrum. If a force of 200 N is applied at a distance of 750 mm from the fulcrum, find i) maximum braking torque, ii) angular retardation of the drum and iii) time taken by the system to come to rest from the rated speed of 360 r.p.m.

4. a) Differentiate flywheel and governor.
b) The turning moment diagram for a multi cylinder engine has been drawn to a scale of 1mm = 4500 N-m vertically and 1mm = 2.4^0 horizontally. The intercepted areas between output torque curve and mean resistance line taken in order from one end are 342, 23, 245, 303, 115, 232, 227, 164mm^2, when the engine is running at 150rpm. If the mass of the flywheel is 1000kg and total fluctuation of speed does not exceed 3% of the mean speed, find the minimum value of the radius of gyration.

5. A spring loaded governor of a Hartnell type has arms of equal length. When the sleeve is in the mid-position, the masses rotate in a circle of diameter 150mm (the ball arms are vertical in the mid-position). Neglecting friction, the equilibrium speed for this position is 360 rpm, the maximum sleeve movement is 30mm and the maximum variation of speed taking account of friction is ± 6% of the mid-position speed. The mass of the sleeve in 5kg and friction may be considered equivalent to 35N at the sleeve. Assume that the power of the governor is sufficient to overcome the friction by 1 % change of speed either way at mid position. Neglecting obliquity effect of arms, determine:

i) The value of each rotating mass
ii) The spring stiffness in N/mm and
iii) The initial compression of the spring.

6. a) What are the primary and secondary forces in reciprocating engines? When secondary forces are neglected?

b) A two cylinder uncoupled locomotive has inside cylinders 0.6m apart. The radius of each crank is 300mm and are at right angles. The revolving mass per cylinder is 250kg and the reciprocating mass per cylinder is 300kg. The whole of the revolving and two-third of the reciprocating masses are to be balanced and the balanced masses are placed, in the planes of rotation of the driving wheels, at a radius of 0.8m. The driving wheels are 2m in diameter and 1.5m apart. If the speed of the engine is 80km.p.h. find hammer blow, maximum variation in tractive effort and maximum swaying couple.

7. a) A vibrating system is having natural frequency 5 Hz. when the mass is doubled the frequency is reduced to 2 Hz. What is the original mass of the system?

b) The mass of a machine is 100kg. Its vibrations are damped by a viscous dash pot which diminishes amplitude of vibrations from 40mm to 10mm in three complete oscillations. If the machine is mounted on four springs each of stiffness 25kN/m, Find i) the resistance of the dash pot at unit velocity, and
ii) the periodic time of the damped vibrations.

8. Discuss, in detail vibration measuring instruments.

CODE No.:10BT50303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations January - 2014

MACHINE TOOLS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about chip formation mechanism and discuss various types of chips.
b) In an orthogonal turning operation with a tool of rake angle 10^0 the following data is observed.
Chip thickness = 0.3 mm, Horizontal component of cutting force =1290 N, Vertical component of cutting force = 1650 N. Determine shear angle, coefficient of friction, friction angle, resultant cutting force.

2. a) How do you specify a lathe? Explain work holding and tool holding devices in lathe.
b) Explain automatic lathes and its importance in the area of manufacturing.

3. a) Describe the working and construction of Crank - slotted lever mechanism in shaper .
b) Explain various operations performed on shaper.

4. a) Discuss the important elements of a drill that are to be taken care while designing a drill.
b) Sketch and explain the working of a jig boring machine.

5. a) Sketch and explain parts of a knee and column type milling machine.
b) What is indexing and discuss different types of indexing methods?

6. a) Discuss the classification of grinding machines and describe grit, grade and structure of a grinding wheel.
b) Explain different types of surface grinders.

7. a) Explain polishing and buffing operations.
b) Write short notes on
i) Broaching ii) Honing

8. a) How are the jigs classified? Give the broad classification of drilling jigs.
b) Explain the advantages and limitations of jigs and fixtures.

CODE No.:10BT50304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations January - 2014

DESIGN OF MACHINE ELEMENTS - I

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the general considerations in design and define the mechanical properties of metals like malleability, hardness and creep.
b) What are preferred numbers? Discuss about basic and derived series.

2. a) What are *Bending stiffness* and *Torsional Stiffness*? What material properties govern these stiffnesses?
b) At a particular point in a biaxially loaded member, the principal stresses are found to be 20 MPa and 40 MPa. If the critical stress of the material is 100MPa, calculate the factor of safety according to i) Rankine criterion, ii) Tresca criterion.

3. A shaft of diameter 50mm is to be subjected to a torque that varies from -1.0 kN.m to 2.0kN.m . Calculate the factor of safety, if the endurance limit and the yield point are, respectively, 150MPa and 300MPa.

4. a) What is an eccentric riveted joint? Explain the method adopted for designing such a joint.
b) A single riveted lap joint is made in 10 mm thick plates with 25 mm diameter rivets. Determine the strength of the joint, if the pitch of rivets is 60 mm.
Take σ_t = 120 MPa; τ= 90 MPa and σ_c = 160 MPa.

5. A bracket is bolted to a column by 6 bolts of equal size as shown in figure 1. It carries a load of 50 KN at a distance of 150 mm from the center of column. If the maximum stress in the bolts is to be limited to 150 MPa determine the diameter of bolt.

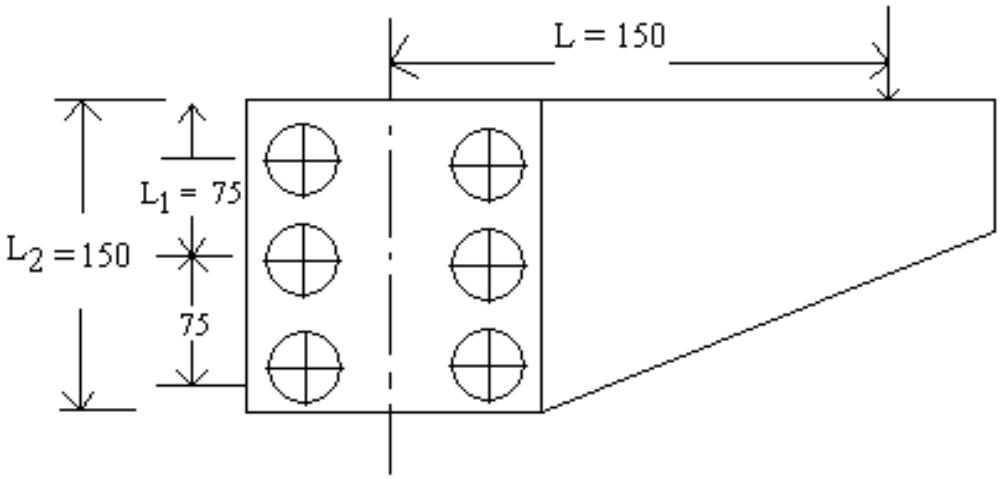

Figure- 1

6. a) Describe the purpose of gib in cotter joint. What are the applications of cotter joints?
b) Design a knuckle joint to transmit 140 kN, with permissible stresses in tension; shear and compression are 75 MPa; 60 MPa and 150 MPa respectively.

7. a) What is the difference between a rod and a shaft?
b) What are various types of loads to which the shafts are subjected to?
c) Compare the weight, strength and stiffness of a hollow shaft whose outer diameter is twice the inner diameter, with that of a solid shaft, if (i) the outer diameter of the hollow shaft is same as the diameter of the solid shaft, (ii) the inner diameter of the hollow shaft is same as the diameter of the solid shaft.

8. a) What is coupling? Give some practical applications.
b) Design and make a neat dimensioned sketch of a muff coupling which is used to connect two steel shafts transmitting 40 kW at 350 r.p.m. The material for the shafts and key is plain carbon steel for which allowable shear and crushing stresses may be taken as 40 MPa and 80 MPa respectively. The material for the muff is cast iron for which the allowable shear stress may be assumed as 15 MPa.

CODE No.:10BT50305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular Examinations January - 2014

INDUSTRIAL ENGINEERING AND MANAGEMENT

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define the term scientific management and explain clearly how planning is useful to business organization.
b) List Fayol's principles of management.

2. a) Define plant layout.
b) Discuss factors to be considered to start a steel factory.

3. a) Define the term work study and state the objectives of work study.
b) Explain different methods of performance rating.

4. a) Explain about various costs associated with the inventory.
b) Explain various records maintained in stores with suitable diagrams.

5. a) Draw the cause and effect diagram of crises facing typical Private engineering college in AP.
b) Explain the following single sampling plan with a neat flow chart.
N=1000, n=50, c=2. State its demerits.

6. a) Describe types of maintenance each in a time or two.
b) Describe bath tub curve in detail.

7. a) Explain the various steps involved in entrepreneurial decision process.
b) Give scope and aim of engineering ethics.

8. a) Differentiate between job evaluation and merit rating.
b) Explain salient features of factories act 1956.

CODE No.:10BT50401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

ANALOG COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define modulation. Explain the need for modulation.
b) With a neat sketch explain envelope detector.

2. a) Give the time domain and frequency domain representation of DSB-SC wave.
b) Explain quadrature null effect in detail.

3. a) Generate AM-SSB-USB modulated wave using Phase shift method.
b) Write about VSB generation and explain why VSB system is widely used for TV broadcasting.

4. a) Explain the generation of FM wave using phase modulator.
b) Explain the operation of phase locked loop.

5. a) Derive an expression for signal to noise ratio in SSB system.
b) Explain threshold effect in AM and FM systems.

6. a) Explain the requirements of carrier frequency for a radio transmitter.
b) Explain the variable reactance type FM Transmitter.
c) Explain about frequency stability in FM Transmitter.

7. a) With the aid of the block diagram explain TRF receiver. Also explain the basic superheterodyne principle.
b) List out the advantages and disadvantages of TRF receiver.

8. a) Explain about PWM generation.
b) Explain the generation PPM using neat sketch.

CODE No.:10BT50402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

ANTENNAS AND WAVE PROPAGATION

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write short notes on
   i) Fields of an oscillating dipole.
   ii) Antenna field zones.
   b) Define reciprocity theorem and prove it in case of antenna system.

2. a) Obtain the expression for radiation resistance of LOOP antenna.
   b) Consider a 100 KHz radio transmitter feeding a 100mt vertical antenna. Determine its effective height, R_r and efficiency if the loss resistance R_L= 1.5Ω.

3. a) Define uniform linear array and derive the expression for array factor of N-element linear array.
   b) Explain the principle of pattern multiplication with an example.

4. Sketch the typical geometry of a helical antenna radiating in axial mode. List out all its parameters and basic characteristics. List out the expression for HPBW, BWFN, directivity and axial ratio.

5. a) Explain paraboloid reflector operation and different feed mechanisms.
   b) A parabolic dish provides a power gain of 75 dB at 15GHz, with 65% efficiency. Find its BWFN, HPBW and diameters.

6. a) Derive FRIIS Transmission formula. Find the transmitter power required to operate a link with identical antennas of 25dBi separated by 15 KM such that received power is -45dBm and f=5.8GHz.
   b) Explain the Gain comparison method for measuring the gain of an antenna.

7. a) Prove that the radius of curvature of raypath in tropospheric propagation is inversely proportional to the rate of change of dielectric constant with height.
   b) Obtain the maximum spacing between a transmitter of height 100mts and a receiver of height 80mts used in tropospheric propagation.

8. a) Derive the relationship between MUF and critical frequency.
   b) Discuss experimental determination of virtual heights and critical frequencies.

CODE No.:10BT50403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) 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) Analyze a typical operational amplifier circuit by calculating its voltage gain and input resistance.
b) Define the terms slew rate, input offset voltage, CMRR and PSRR pertaining to an operational amplifier.

3. a) Explain and draw the practical Differentiator circuit by using op-mp and derive the expression for V_0.
b) Design the practical differentiator circuit to differentiate a sine wave signal of $2\sin(2\pi 300t)$. Draw the output waveform.

4. a) Explain the working principle of monostable multivibrator by using 555 IC with neat block diagram.
b) How 555 IC astable multivibrator can be used as voltage controlled oscillator?

5. a) Explain the following filters.
i) Notch filter ii) All pass filter
b) Design a second order LPF at high cut-off frequency of 2KHz.

6. a) Design a monostable multivibrator using 555 timer to get a pulse width of 0.1msec. Draw the circuit diagram with its waveforms.
b) Explain the salient features and various applications of 565 PLL, in brief.

7. a) Write about any 4 specifications of DAC/ADC.
b) Compare direct and integrating type ADCS. With neat sketches explain the working of a successive approximation ADC.

8. a) Draw 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

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III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Design CMOS transistor circuit for 3 - input AND gate with the help of function table. Explain the operation of the circuit diagram.
b) What are the parameters that are necessary to define the electrical characteristics of CMOS circuits? Mention the typical values of a CMOS NOR gate.

2. a) Explain the following with reference to TTL gate.
i) Voltage levels for logic '1'and logic '0' ii) High state fan-out
b) Draw the circuit diagram of two-input 10k ECL OR gate and explain its operation.

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. Design the logic circuit and write a data-flow style VHDL program for the following functions.
a) **$F(A) = \pi\, p,q,r,s(1,3,4,5,6,7,9,12,13,14)$**
b) **$F(X) = \sum A.B.C.D\,(3,5,6,7,13) + d(1,2,4,12,15)$**

5. Design a 16-bit ALU using 74 X 381 and 74 X 182Ic's. Implement VHDL source code using data flow style for the same.

6. a) Design a barrel shifter for 8-bit using three control inputs. Write a VHDL program for the same in data flow style.
b) Write a behavioral VHDL program to compare 16-bit signed and unsigned integers.

7. a) Explain the difference between D-latch and D-Flip-flop using the process block in VHDL.
b) Explain the working of ring counter and write VHDL code for 4-bit ring counter.

8. a) Explain (i) internal structure (ii) timing and applications of ROM.
b) Explain in detail about DRAMS.

CODE No.:10BT50421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

ELECTROMAGNETIC THEORY

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Three equal point charges of 2μc are in free space at (0,0,0),(2,0,0) and (0,2,0) respectively. Find net force on Q_4(5μc) at (2,2,0).
b) An infinite uniform charge of line charge density=30nc/m is placed at y = 3, z = 5. Find the electric field at origin.

2. a) Derive the boundary conditions for electric field intensity E at the conductor-dielectric interface.
b) Two isotropic dielectrics meet on plane **z =0. For z≥0,** $\varepsilon_{r1} = 4$ and for **z≤0**, $\varepsilon_{r2} = 3$. A uniform electric field $\mathbf{E_1} = 5\mathbf{a}_x - 2\mathbf{a}_y + 3\mathbf{a}_z$ kV/m exists for **z≥0**. Find the energy densities in both dielectrics and energy within a cube of 2m centred at (3, 4, -5).

3. a) Define i) Vector magnetic potential
ii) Magnetic scalar potential
b) A circular loop of 3 units radius is centered at the origin in **z=0** plane and carries a D.C current of 10 mA, along **φ** direction. Find the magnetic flux density at (0, 0, ± 4).

4. a) What is the inconsistency of Amperes law?
b) Derive the boundary conditions for the tangential components of Electrostatic fields at the boundary between two perfect dielectrics.

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 $\varepsilon_r = 8$, $\mu_r = 2$ has $\mathbf{E} = 0.5\exp(-0.33z)\sin(10^8 t - \beta z)\,\mathbf{a}_x$ 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) What is electrostatic discharge?
b) Write short notes on high power electromagnetic.

8. Write the following:
a) Cable shielding
b) System grounding for EMC
c) Precautions in earthing

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

LINEAR AND DIGITAL IC APPLICATIONS

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Tabulate the characteristics of an ideal and practical operational amplifiers. Draw the equivalent circuit of an operational amplifier.
b) What are the various DC and AC characteristics of an op-amp? Explain any one of them from each.

2. a) Write a short note on the following applications of operational amplifier.
i) Integrator ii) Differentiator
b) With a neat circuit diagram derive the expression of closed loop gain of an inverting amplifier.

3. a) Explain the operation of Schmitt trigger using 555 timer with its circuit diagram
b) Draw the circuit of a 565 PLL IC and explain its working.

4. a) Consider the dynamic behavior of a CMOS output driving a given capacitive load. If the resistance of the charging path is double the resistance of the discharging path, is the rise time exactly twice the fall time? If not, what are the other factors affect the transition times?
b) What are the desirable features of CMOS gates? Sketch the circuit of CMOS NAND gate and verify that it satisfies the Boolean NAND equation.

5. a) Explain the several factors to consider in TTL/CMOS interfacing.
b) Draw the circuit of ECL logic OR/NOR gate and explain its function.

6. a) Differentiate the terms Simulation and Synthesis with respect to VHDL.
b) Explain the concept of Structural Design Elements used in VHDL with an example.

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) Write VHDL program for an 8- bit modulo-N counter with clear and load inputs.
b) Explain the function of universal shift register.

CODE No.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

PRINCIPLES OF COMMUNICATIONS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail about each block of basic electrical communication system with neat block diagram.
b) Find the Fourier Transform of
i) Signum function ii) Unit Step function

2. a) Explain filter method of suppressing unwanted sideband.
b) A carrier wave of frequency 10 MHz and peak value of 10 V is amplitude modulated by a 5 KHz sine wave of amplitude 6 V. Determine the modulation index and draw the one sided spectrum of modulated wave.

3. a) Bring out the differences between Wide and Narrow band Frequency modulation.
b) Explain how FM can be obtained using 'indirect method' with the help of neat block diagram.

4. a) What is the fundamental difference between pulse modulation, on the one hand, and frequency and amplitude modulation on the other?
b) Discuss about the generation of PPM.

5. a) Draw the block diagram of PCM generator and explain each block.
b) Discuss different types of noise occur in delta modulation.

6. a) Explain about ASK and derive its probability error.
b) Explain the operation of FSK.

7. a) One of 5 possible messages $\mathbf{Q_1}, \mathbf{Q_2}, \mathbf{Q_3}, \mathbf{Q_4}, \mathbf{Q_5}$ having probability 1/2, 1/4, 1/8, 1/16, 1/16, respectively is transmitted. Calculate entropy and information rate if there are 16 outcomes /sec.
b) Write short notes on the following:
i) Mutual Information. ii) Average information

8. a) Explain about error correction codes.
b) The generator matrix for (7,4) block code is given below
i) Find the parity check matrix H of this code.
ii) Show that these two matrices satisfy the condition $CH^T = 0$.

$$G = \left[\begin{array}{cccc:ccc} 1 & 0 & 0 & 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 1 & 1 \\ 0 & 0 & 0 & 1 & 1 & 0 & 1 \end{array}\right]$$

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the concept of space complexity.
b) Write a short note on-Amortized analysis.

2. a) Explain Depth first traversal with an example.
b) Write an algorithm to find the articulation point of a given graph.

3. a) Give a recursive and non recursive algorithm for binary search. Also find its time complexity.
b) Show how quick sort algorithm sorts the following sequence of keys in ascending order 33,66,11,55,67,78,24,35,88,99

4. a) 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. Explain optimal binary search algorithm with the help of suitable examples. Also find its time complexity.

6. State sum of subset problem. How to solve this problem using backtracking, explain it with suitable example?

7. a) Apply the branch-and-bound technique in solving the Traveling Salesman Problem.
b) Explain FIFO branch and bound solution.

8. a) Explain the Strategy to prove that a problem is NP hard.
b) What is meant by halting problem explain with an example.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

MICRO-PROCESSOR AND INTERFACING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between 8085 and 8086 microprocessors.
b) What do you mean by pipelined architecture? How it is implemented in 8086?

2. a) Write an ALP to find the even and odd numbers of given sequence.
b) Explain the physical address formation in 8086.

3. With neat sketches, explain the read and write cycles timing diagrams of 8086 in maximum mode.

4. a) Write the features of mode 0 in 8255. Specify handshaking signals and their functions if port A of 8255 is set-up as input port in mode 1.
b) Write an ALP in 8086 to generate a symmetrical square waveform with 1KHz frequency. Give the necessary circuit setup with a DAC.

5. a) 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 mode instruction control word format of 8251.
b) Draw and discus the synchronous mode transmit and receive data formats of 8251.

7. a) Briefly explain about RISC processors.
b) Discuss salient features of 80386 microprocessor.

8. a) Explain the steps in executing an Interrupt in 8051. Write an 8051 ALP to transfer the message " LBRCE" serially at 4800 baud, 8 bits, 2 stop bits.
b) Give steps to program 8051 for serial data transfer. Write a delay routine for 1 millisecond using timer 0 of 8051 for 12 MHz crystal frequency.

CODE No.:10BT50503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

DATABASE MANAGEMENT SYSTEMS

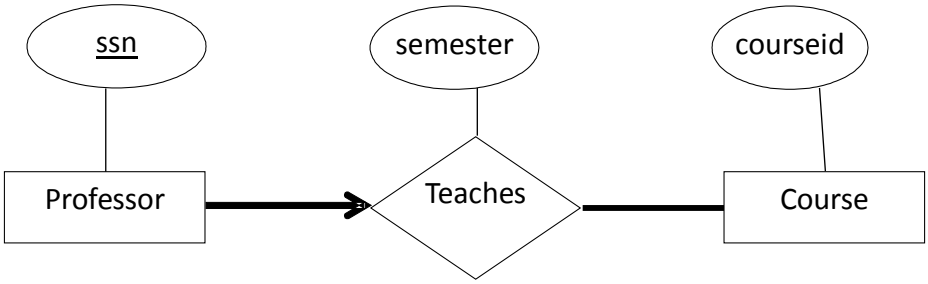
[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Compare file system versus DBMS
b) Discuss about levels of data abstraction in DBMS

2. a) List the entity sets and their primary keys of the following diagram



b) Discuss about ternary relationship

3. a) What is an unsafe query? Give an example and explain why it is important to disallow such queries.
b) What is relational completeness? If a query language is relationally complete, can you write any desired query in that language.

4. a) Explain having, group by and distinct clauses in SQL
b) Consider the following schema:
suppliers(sid:integer, sname:string,address:string)
parts(pid:integer,pname:string,color:string)
catalog(sid:integer,pid:integer,cost:real)
Write the following SQL queries
i) Find the pnames of parts for which there is some supplier.
ii) Find snames of suppliers who supply every green part.
iii) Find sid of supplier who supplies maximum number of parts.
iv) Find the number of Suppliers presently supplying the parts.

5. a) Define functional dependency.
b) Give a set of FD**s** for the relation schema R(A,B,C,D) with primary key AB under which R is in 1NF but not in 2NF.
c) Briefly discuss about Schema Refinement in Database Design

6. a) What is a transaction? In what ways is it different from an ordinary program?
b) What is a serializable schedule, recoverable schedule and strict schedule? Give examples.

7. a) Describe about storage structure.
b) Write short notes on failure with loss of non-volatile storage.

8. a) Explain the insertion and deletions in the B+ trees
b) Explain the difference between each of the following.
i) Primary versus secondary indexes ii) Dense verses sparse indexes

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

OPERATING SYSTEMS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) List out the various services provided by an operating system.
b) What is a system call? Explain the various types of system calls.

2. Explain the process life cycle with neat diagram. Describe the typical elements of process control block with diagram.

3. Explain the following in detail:
a) Semaphore b) RPC

4. What is deadlock? What are the necessary conditions for it to happen? Explain deadlock prevention methods in detail.

5. a) Explain the concept of thrashing. How can it be prevented?
b) Explain optimal page replacement algorithm with example.

6. a) Discuss the acyclic file structure in brief.
b) Explain how the VFS layer allows an operating system easily to support multiple types of file systems.

7. a) Explain Tertiary storage structure.
b) Write about the kernel I/O subsystem.

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/Supplementary Examinations January - 2014

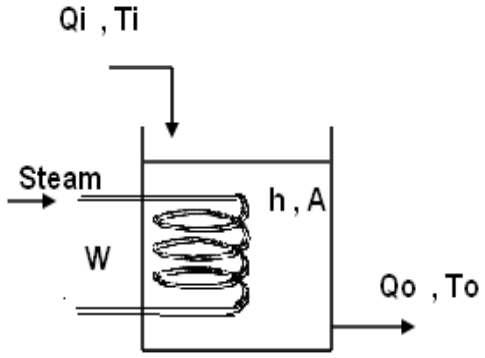
PROCESS CONTROL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

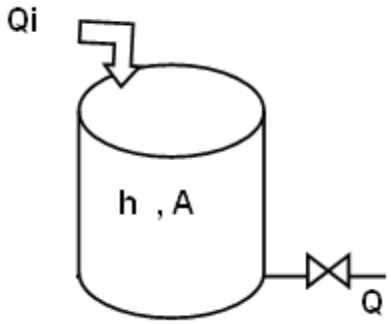
Answer any FIVE questions
All questions carry equal marks

1. a) Analyze the Degree of Freedom for the given system. How will you reduce it to zero? Show proper schematics of your design.



Where, Q is in Lph T in Deg.Kelvin h in ft., A in ft^2 W is in Cal/sec

b) A self regulatory liquid level system is shown in Fig. Determine the transfer function $H(s) / Q_i(s)$.



2. a) Compare P, I, & D modes with equations. What are their relative advantages and disadvantages?
b) Discuss in detail about characteristics of ON-OFF control.

3. a) Explain the principle of operation of hydraulic PI controller.
b) Explain the operation of electronic PD controller.

4. a) Explain in detail about determination optimum settings for mathematically described process using time response.
b) Discuss process reaction curve method for control loop tuning.

5. a) Explain different types of electrical actuators and give their applications.
b) Explain with neat sketch about P/I Converter.

6. With neat sketches explain the construction and operation of
a) Globe value ; b) Butterfly values.

7. a) Compare the single loop and cascade controllers.
b) Explain in detail about ratio control with a suitable example.

8. a) Write short notes on mixing process.
b) Explain a control scheme for rotating drum dryer.

CODE No.:10BT51002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

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 Sine Bars are used to locate any work to a given angle and also to check unknown angles of heavy components.
b) Explain how Gauge Blocks are used for measurement of length.

2. a) Explain the stroboscopic method of measuring rotational velocity.
b) Discuss the torque measurement by magneto-strictive transducer.

3. a) Explain the different types of Manometers for pressure measurements.
b) Explain the principle and operation of Knudsen and Thermal conductivity gauge.

4. a) Write short notes on Ultrasonic type Flow Meters.
b) Discuss about Area type Flow Meters.

5. a) Define viscosity. Explain how to measure viscosity using a capillary.
b) Write short notes on pressure head type and displacer type densitometer.

6. a) Explain Radiation Pyrometers with necessary diagrams.
b) Describe the measurement of temperature using Thermistors.

7. a) Discuss the displacer type level indicators.
b) With a neat sketch describe the ultrasonic level guager.

8. a) Explain capacitive accelerometer design in detail.
b) Write short notes on various types of microphones.

CODE No.:10BT51201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

SOFTWARE ENGINEERING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. A Passenger aircraft is composed of several millions of individual parts and requires thousands of persons to assemble. A four - lane highway bridge is another example of complexity. The first version of word for Windows. A word processor released by Microsoft in November 1989, required 55 person-years, resulted into 249,000 lines of source code, and was delivered 4 years late. Aircraft and highway bridges are usually delivered on time and below budget, whereas software is often not. Discuss what are, in your opinion and the differences between developing an aircraft, a bridge and a word processor, which would cause this situation?

2. a) What is prototyping? With neat diagram explain prototyping model.
b) Explain about the phases involved in unified process.

3. Identify the functional requirements and non-functional requirements in the following systems
a) An unattended petrol pump system which includes a credit card reader. The customer swipes the card through the reader then specifies the amount of fuel required. The fuel is delivered and the customer's account debited.
b) The cash dispensing function in a bank auto-teller machine.
c) The spell checking and correcting function in a word processor.

4. a) What is design model? Explain in brief Data design elements and Interface design element.
b) Explain briefly about architectural patterns.

5. a) Write a short notes on object oriented design process.
b) Briefly explain about the steps involved in interface design.

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) Explain the difference between availability and reliability.

7. A University intends to procure an integrated student management system holding all details of registered students including personal information courses taken and examination marks achieved. The alternative approaches to be adopted are either:
a) Buy a database management system and develop an in-house system based on this database.
b) Buy a system from another university and modify it local requirements.
c) Join a consortium (partnership) of other universities, establish a common set of requirements and construct a software house to develop a single system for all of the universities in the consortium.
Identify three possible risks in each of these strategies and suggest techniques for risk resolution which would help in deciding which approach to adopt.

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 January - 2014

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) List the characteristics of a good line algorithm. Discuss plotters and their applications
b) Write in detail the functioning of DVST.

3. a) How to make use of matrices in transformations and explain the same with examples.
b) Describe how lines outside the screen are identified in Cohen-Sutherland algorithm with examples in detail.

4. a) Explain generation of bar and pie charts.
b) Explain the three and two point perspective views.

5. a) List the characteristics of parametric cubic curves.
b) Develop the necessary transformation to magnify the triangle with vertices A(0,0), B(1,1), C(5,2) to twice its size while keeping C(5,2) fixed.

6. a) Derive the perspective projection transformation matrix.
b) Explain the working process of 3D clipping.

7. a) 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

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III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

COMPUTER GRAPHICS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Illustrate about DDA line drawing algorithm with relevant examples in detail.
b) Explicate in detail the basic features of graphic hardware and software components.

2. a) Write Bresenham's algorithm for line generation which is suitable for any Slope.
b) Explain the procedure for scan line polygon filling algorithm.

3. a) What are the matrix representations of ;
i) translation ii) rotation iii) scaling transformation techniques
b) Explain about the shear and composite transformations.

4. a) Explain generation of bar and pie charts.
b) Explain the three and two point perspective views.

5. a) Explain basic illumination models and polygon rendering methods.
b) Explain different representation of polygon meshes in solid modeling.

6. a) Describe the super sampling technique of antialiasing.
b) Derive the transformation matrix for rotation about an arbitrary axis in 3D domain.

7. a) Write about area subdivision algorithm for back face detection.
b) What happens when two polygons have the same Z value and the Z-buffer algorithm is used?

8. a) List and explain about the steps of animation.
b) What are the various types of interpolation used in animation?

CODE No.:10BT51301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

ADVANCED CONTROL SYSTEMS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Consider the system defined by

$$\dot{x} = Ax + bu$$

$$y = Cx$$

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

Transform the system equations into the controllable canonical form.

2. Examine the observability of the given system

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \\ \dot{x}_3 \end{bmatrix} = \begin{bmatrix} 0 & 1 & 1 \\ 0 & 1 & 1 \\ 0 & -2 & -3 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} u \quad and \quad y = [3 \quad 4 \quad 1] \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}$$

3. What is backlash? Derive the describing function of backlash nonlinearity.

4. Construct phase trajectory for the system described by the equation, $\frac{dx_2}{dx_1} = \frac{4x_1 + 3x_2}{x_1 + x_2}$

Comment on the stability of the system.

5. a) Consider the second-order system

$$\dot{X} = AX,\ where\ X = \begin{bmatrix} x_1 \\ x_2 \end{bmatrix},\ A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix},\ \left(a_{ij} = real\right)$$

Find the real symmetric matrix P, which satisfies $A^TP + PA = -I$. Then find the condition that P is positive definite.

b) Explain the second method of Liapunov for the stability analysis of 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. Find optimal control law for the system

$$\dot{X} = \begin{bmatrix} 0 & 1 \\ 1 & 1 \end{bmatrix} X + \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix} u$$

With performance index

$$J = \int_0^{\infty} (x_1^2 + u_1^2 + u_2^2) dt$$

8. a) Derive the transversality condition of the calculus of variations.

b) Find an external for the functional

$J(x) = \int_1^{t_f} \left[2x(t) + \frac{1}{2} \dot{x}^2(t) \right] dt$ the boundary conditions are

$x(1)=4$, $x(t_f)=4$, and $t_f>1$ is free.

CODE No.:10BT51302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

PROCESS CONTROL

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define degrees of freedom. Discuss the elements of process dynamics.
b) Explain about the characteristics of liquid system.

2. a) Briefly discuss the characteristics of a proportional control mode. Mention the type of processes for which proportional controller is most suited.
b) A PI controller has K_p=5 and K_I=6 sec. Find the controller output for an error given by e_p=4sin(Πt). Also find the phase shift between error and controller output.

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 hydraulic integral and proportional controllers.
b) Compare displacement and force type pneumatic controllers.

5. a) A heating furnace requires a control valve passing 10gpm preheated light fuel oil (SP.gr.=0.8) at full load and only 2gpm at the smallest heating load. The source pressure constant at 50 psi gauge, but there is 10psi drop in the oil pre heater and 20 psi drop at the furnace burner nozzles. Remaining pressure drop occurs only at control valve when it is fully opened.
i) Find out control valve size required for the above applications
ii) Find out required rangeability of the valve
iii) Find out characteristic coefficient(α).
b) What are the main advantages and disadvantages of cascade control? For what kind of process can you employ Cascade control?

6. a) Explain in detail about Heat exchangers.
b) Explain in detail about steam plant control.

7. Explain the principles governing
a) The apporting reactant flows.
b) Temperature control.

8. a) Explain any two basic architectures of control systems.
b) Explain power generation plant subsystems and its operations.

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 January - 2014

SYSTEM SOFTWARE

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write the hardware and software specifications of IBM Compatible PC.
b) Explain different data definition directives IBM PC Assembler.

2. Explain briefly about Shifting and rotating. Explain Boolean operations.

3. Explain all different functions used in BIOS INT 10H for graphics and text processing.

4. a) What are the directives used in Macro definition? Explain.
b) Discuss macro calls with an example.

5. Describe the following in detail:
i) Conditional macro expansion
ii) MASM macro processor
iii) ANSI C macro language

6. Distinguish between one pass and multi pass assemblers.

7. Explain the following in detail:
i) Linkage Editor
ii) Dynamic Linking
iii) Bootstrap Loaders.

8. a) Describe the different features of a Text Editor.
b) Explain with an example the functions of a Debugger.

CODE No.:10BT51501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

SYSTEM SOFTWARE

[Computer Science and Systems 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. Explain briefly about Shifting and rotating. Explain Boolean operations.

3. a) Explain the following instructions with suitable instruction sequence for each instruction assuming suitable data: i) SCANS ii) CMPS iii) LODS iv) STOS
b) Give the instruction sequence to set graphics mode for the resolutions i) 320**x**200,10 colors ii) 640**x**200 iii) 640 **x** 480,16 colors. Write the function of the following program:

```
pmt   db     'Your Number?', ODH,OAH
      mov    ah,40H
      mov    bx,01
      mov    cx,14
      lea    dx,pmt
      int    21H
```

4. Write a macro which takes A,B,C and D as a parameter and calculate D =A*(B+C). By using the macro processor generate all the data structures for it.

5. Draw the flowchart or state the algorithm of PASS-I of the assembler and explain it.

6. Discuss the problems encountered during single pass assembly. Suggest the alternative method clearly.

7. a) Write short notes on Bootstrap loaders.
b) Discuss the design procedure for direct-linking loaders.

8. Explain in detail about the following
i) Editing process
ii) Interactive debugging systems.

CODE No.:10BT51502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

OBJECT ORIENTED SOFTWARE ENGINEERING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) 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) How is COCOMO II Model different than COCOMO I ? Also describe the Needs, Issues, Strategies and the three primary premises of COCOMO II.
b) Explain in short - Software Myths.

3. a) Explain about the basic structural modeling in UML.
b) Develop the usecase for using debit card for a meal at restaurant.

4. a) Draw the following UML diagrams for Flight Booking System
i) Usecase Diagram ii) Object Diagram
iii) Collaboration Diagram iv) Package Diagram
b) State and explain the working of two tools that is used in designing UML diagrams.

5. a) Explain PRiSM Methodology.
b) Differentiate between Waterfall Model and Spiral Model.

6. a) What is meant by BVA? Discuss the guidelines to create BVA test cases.
b) What is the overall strategy for software testing? Explain it clearly.

7. Write note on the following:
a) Software risks
b) Risk identification

8. a) Discuss clearly the statistical SQA with example.
b) What is meant by software reliability? Discuss the measures of it.

CODE No.:10BT52301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

GENETIC ENGINEERING

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the sigma switch mechanism in *Bacillus subtilis*.

2. What are Plasmids? Explain types, identification, classification and purification of plasmids.

3. a) 'pBR322, genetically modified vector'. Explain.
b) Explain M13 Vector.

4. Write the importance of Northern and Western hybridization in assessing the expression of genes.

5. Differentiate between genomic library and cDNA library and their importance in the genomics.

6. Describe the principle, variants and applications of PCR technology.

7. What are transposons and write about their detection in bacteria?

8. Write about:
a) Gene Therapy
b) Limitations of r-DNA Technology

CODE No.:10BT52302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

PLANT BIOTECHNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Discuss about the method of micropropagation, its advantages and disadvantages?

2. What is somatic hybridization? Mention the applications of somatic hybrids.

3. Define anther culture. Explain the invitro production of haploid plants.

4. Discuss the scope of plant cell culture for production of secondary metabolites.

5. Explain the role of viral vectors in gene transfer.

6. Discuss the strategies employed for insect resistance in plant genetic engineering.

7. Elaborate on the production of transgenic plants tolerance to senescence.

8. Give a brief account of molecular breeding tools.

CODE No.:10BT52303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

BASIC INDUSTRIAL AND ENVIRONMENTAL BIOTECHNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Discuss in detail about ethanol production using fermentation processes and describe the Ethanol history from alcohol to car fuel.

2. Explain about bacterial antibiotics with suitable examples.

3. Write about cellulose production methods with neat diagram.

4. Write short note on therapeutic and diagnostic applications of
   a) Interleukins
   b) Interferons.

5. What is meant by Bioleaching? Explain.

6. Discuss in detail aerobic treatment of sewage water.

7. Give an overview of phytoremediation and its applications.

8. Discuss in detail about biological detoxification with suitable example.

CODE No.:10BT52304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

HEAT TRANSFER IN BIOPORECESSES

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the conduction of heat equator through composite wall.
b) A furnace wall is constructed of a layer of chrome brick 152 mm thick with a mean thermal conductivity of 1.33 w/mk and another of five brick 203 mm thick with a mean thermal conductivity of 0.329 w/mk. The inside furnace wall temperature is 788^{o}**c** and the outside furnace wall temperature is 30^{o}**c**. What is the rate of heat loss through 1m^{2} of the furnace wall in watts? What is the temperature between the two layers of brick?

2. A vertical plate is at 96^{o}C in an atmosphere of air at 20 ^{o}C Estimate the local heat transfer coefficient at a distance of 20 cm from the lower edge and the average value over the 20 cm length.

3. A square plate, 50 cm x 70 cm, is at 140^{o}C and is exposed to air at 20^{o}C. Find the heat loss from the plate if
a) The plate is kept vertical
b) The plate is placed horizontally. Find the percentage change in heat flow due to the change in position.

4. Describe with neat sketches, the construction and flow patterns in 2, 4- heat exchanger.

5. Explain the process of pool boiling of a saturated liquid.

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) Write the energy balance equations for a single effect evaporator.
b) A single-effect, vertical short tube evaporator is used to concentrate a syrup from 10% to 40% solids at the rate of 2000kg of feed per hour. The feed enters at 30^{o}C and a reduced pressure of 0.33 kg/cm^{2} is maintained in the vapour space. At this pressure liquid boils at 75^{o}C Saturated steam at 115^{o}C is supplied to the steam chest. No sub cooling of the condensate occurs. Calculate steam requirement and evaporator area.
Following data is available:
Specific heat of liquor 3855 kJ/kg^{o}c
Latent heat of steam 2328 kJ/kg.
Steam condensation temperature 345 k.
Overall heat transfer coefficient 2498 w/m^{2} degree.

8. a) Discuss analogy between heat, mass and momentum transfer with the help of equations.
b) Give the applications of heat transfer in the design of a continuous sterilizer.

CODE No.:10BT52305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

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 first order reversible liquid reaction A<=>R, C_{Ao}= 0.5mol/lit, C_{Ro}=0, take place is a batch reactor. After 8 minutes, conversion of A is 33.3% while equilibrium conversion is 66.7%. Find the rate equation for this reaction.

3. For the reaction in series, $\mathbf{A \xrightarrow{k_1} R \xrightarrow{k_2} S}$, $\mathbf{k_1 = k_2}$,
Find the maximum concentration of R and when it is reached.

4. 100 g.mol of R are to be produced hourly from a feed consisting of a saturated solution of A (C_{A0} = 0.1 mol/lit) in a mixed flow reactor. The reaction is A -> R, $r_R = 0.2\ hr^{-1}\ C_A$. Cost of reactant at C_{A0}= 0.1 mol/ lit is $\$_A = \$0.50/molA$. Cost of reactor including installation, auxiliary equipment, instrumental overhead, labor, Depreciation etc., is $\$m = \$0.01/hr.lit$. What reactor size, feed rate and conversion should be used for optimum operation? What is the unit cost of R for these conditions if unreacted A is discarded?

5. Define enzyme inhibitor? What are the various categories of inhibition? Explain about substrate inhibition in detail?

6. Explain competitive inhibition and obtain its kinetic representation.

7. Explain E-, F- and C- curves.

8. a) A reactor with a number of dividing baffles is to be used to run the reaction A ⟶ R with -rA= 0.05 C_A mol/liter min. A pulse tracer test gives the following output curve:

Time,min	0	10	20	30	40	50	60	70
Concentration reading	35	38	40	40	39	37	36	35

i) Find the E versus t curve.

ii) Calculate the variance of the E curve.

iii) How many tanks in series in this vessel equivalent to?

iv) Calculate XA assuming the tanks in series mode

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

THEORY OF COMPUTATION

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Give a model of discrete automaton and describe a finite automaton with a block diagram.

b) Consider the finite state machine whose transition function δ is given by table in the form of a transition table. Give the entire sequence of states for the input string 110001.

Input		
State	0	1
->q0*	q2	q1
q1	q3	q0
q2	q0	q3
q3	q1	q2

Note:- * indicates the final state.

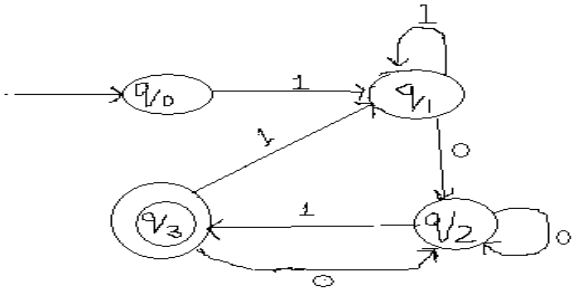
2. a) Construct NFA accepting the set of all strings over {a,b} ending in aba. Use it to construct a DFA accepting the same set of strings.

b) Construct a minimum state automaton equivalent to a given automaton on whose transition table is defined as

State	Input	
	a	b
->q0	q0	q3
q1	q2	q5
q2	q3	q4
q3	q0	q5
q4	q0	q6
q5	q1	q4
q6*	q1	q3

Note: * indicates the final state.

3. a) Find the regular expression corresponding to the automaton given.



b) Write the *closure* properties of regular sets.

4. a) i) Obtain a CFG to generate unequal number of a's and b's.
ii) Obtain a CFG to obtain balanced set of parentheses.(i.e every left parentheses should match with the corresponding right parentheses).
b) Check whether the given grammar is Ambiguous or not
i) S→0S1/SS/ € derive string w=0011 ii) S→SBS/a derive string w=0011.

5. a) Simplify the following grammar S→A/0C1 , A→B/01/10 ,C→C0/ €.
b) Convert the given CFG into GNF S→ abSb | aa

6. a) Design PDA for Equal number of a's and b's.
b) Convert the given CFG to GNF S→AB , A→BS/b, B→SA/A.

7. a) Formally define acceptance of Push Down Automata by empty stack and final state.
b) State and explain the pumping Lemma for context Free Grammars.

8. a) Explain the various valid modifications of Turing Machines.
b) Construct a Turing Machine to shift over the given string of binary two positions right.

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations January - 2014

COMPUTER NETWORKS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are host systems? What is the role of routers?
b) Why layered approach is used for the design of computer network.

2. a) What is the maximum data rate of a channel with noise and without noise?
b) Compare Laser and LED as light emitting devices.
c) What is the difference between single mode and multimode fibers?

3. a) Compare Error detection and Error correction.
b) Explain how Hamming method can be used for burst error correction. Illustrate with an example.
c) What type of errors CRC method can detect?

4. Differentiate Pure ALOHA and Slotted ALOHA with efficiency calculations.

5. a) Differentiate adaptive and non adaptive routing algorithms.
b) Explain about IP addresses.

6. Explain TCP Segment Header with a Neat Header format.

7. a) Explain the Dynamic Web Document.
b) Write short notes on WWW with suitable diagram.

8. a) Give the traditional model for cryptography.
b) Explain Wi-Max.

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

ENVIRONMENTAL SCIENCES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write about various components of Environment ie., biotic and abiotic in detail.
b) Discuss about the Renewable Resources of Energy.

2. a) What is an ecosystem? Describe the effects of current changes in the Environment on the following ecosystems.
i) Aquatic ecosystem ii) Grassland ecosystem
b) Explain the advantages and disadvantages of Ecotourism in National Parks of India.

3. a) Define a natural hazard. Give a few examples of natural hazards
b) Describe the causes of Chernobyl disaster and their affects on environment and human being.

4. a) Explain in detail about in-situ conservation of biodiversity.
b) Define biodiversity and explain in detail about threats to biodiversity.

5. a) What are the remedial measures for cyclone affected areas and how do you take preventive measures to escape from tsunamis?
b) Write few case studies of man and animal conflicts in India and write reasons for such conflicts.

6. a) Explain briefly about watershed management.
b) Write a detailed note on acid rains.

7. a) Write about Wild life protection act.
b) Discuss about environmental ethics and human rights.

8. a) Discuss the population explosion on Indian environment.
b) What is meant by occupational health hazard? Explain with suitable examples.

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

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. Find the co-ordinates of the points lying in the ellipse:
$(X^2/4) + (Y^2/5) + (Z^2/25) = 1$, $X + Y - Z = 0$, which are such that the square of their distance from the origin is maximum.

3. Solve the linear programming problem using Simplex method:
Maximize $Z = 3x_1 + 5x_2 + 4x_3$

Subject to
$$2x_1 + x_2 \leq 8$$
$$2x_2 + 5x_3 \leq 10$$
$$3x_1 + 2x_2 + 4x_3 \leq 15$$
$$x_1, x_2, x_3 \geq 0$$

4. Four new machines M_1, M_2, M_3 and M_4 are to be installed in a machine shop. There are five vacant places A, B, C, D and E available. Because of limited space, machine M_2 cannot be placed at C and M_3 cannot be placed at A. C_{ij}, the assignment cost of machine **i** to place **j** in rupees is shown below.

	A	B	C	D	E
M_1	4	6	10	5	6
M_2	7	4	-	5	4
M_3	-	6	9	6	2
M_4	9	3	7	2	3

Find the optimal assignment schedule.

5. Find the minimum of $f = \lambda^5 - 5\lambda^3 - 20\lambda + 5$ by quadratic interpolation method while taking initial step size as $t_0 = 0.5$ and $A = 0$.

6. Using a neat flow chart explain Powell's method.

7. Solve the problem using penalty function technique;
Minimize $f(x) = x^2$
Subjected to $g(x) = 1 - x <= 0, x \in R$.

8. Explain the principle of optimality proposed by Bellman. What are the applications of dynamic programming in engineering and management fields?

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

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

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

Answer any FIVE questions
All questions carry equal marks

1. What is demand forecasting? Explain the various techniques of demand forecasting?

2. What do you mean by law of diminishing returns to scale with the help of illustration.

3. Explain the following:
a) Marginal cost pricing
b) Cost plus pricing
c) Going rate pricing

4. Explain advantages and disadvantages 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. The following Balances are extracts from the books of Mr. Nithesh as on 31.03.2012.

Capital	30,000	Buildings	22,500
Machinery	15,000	Furniture's	1,500
Motor car	12,000	Opening Stock	24,000
Purchases	1, 11,000	Purchase return	1,500
Sales	2, 10,000	sales Returns	750
Sundry Debtors	22,500	Sundry Creditors	7,200
Cash In Hand	450	cash at Bank	7,050
Salaries	21,000	Rent	6,000
Bad debts	300	Taxes	900
Discount earned	750	Insurance premiums	600
General Expenses	1,200	Discount allowed	1,050
Provision for Doubtful Debts	450		

Adjustments
a) Outstanding salaries 2,000, Commission 300, rent 1,200.
b) Insurances Premiums Prepaid Rs. 150.
c) Maintain Provision for doubtful debts @5%.
d) Depreciate Machinery @5%, Motor Car @10%, Furniture @4% and Buildings @3%.
e) Closing stock as on 31.03.2012 Rs. 30,000.

7. A choice is to be made between two competing projects, which require an equal investments of Rs. 50,000 and are expected to generate net cash inflows as under:

End of the year	Project I (Rs.)	Project II (Rs.)
1	25,000	10,000
2	15,000	12,000
3	10,000	18,000
4	Nil	25,000
5	12,000	8,000
6	6,000	4,000

The cost of capital of the company is 10%. Using discounted cash flow method, recommend which proposal is to be preferred. Use P.V.F. from 1st to 6th year at 0.909, 0.826, 0.751, 0.683, 0.621, 0.564 respectively.

8. Explain the advantages and disadvantages of 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 - 2014

COMPUTER ARCHITECTURE AND ORGANIZATION

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about fixed point and floating point arithmetic operations in detail.
b) Describe the role of system software to improve the performance of a computer.

2. a) What is an instruction? Explain about memory-reference instructions.
b) Explain the Bus Transfer and Memory Transfer.

3. a) Distinguish between micro programmed control and hardware control.
b) Explain Nano instructions and Nano meters.

4. a) What do you mean by instruction hazard? Describe the solutions of instruction hazards.
b) Write short notes on vector processing.

5. a) Explain RAID levels in detail.
b) Describe the operation of DMA Controller with block diagram.

6. a) Describe about serial communication in detail.
b) Explain about IEEE1394 in detail.

7. a) Explain about cache coherence.
b) Explain shared memory multiprocessors.

8. Explain RISC architecture in detail.

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

CONTROL SYSTEMS

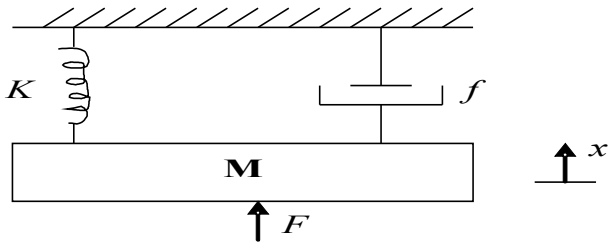
[Electrical and Electronics Engineering]

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 D.C. servo motor.
b) Obtain the differential equations of the following system.



3. a) A unity negative feedback control system has the plant $G(s) = \frac{k}{s(s + 6\sqrt{2k})}$. 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 0.5 second?
b) Explain the significance of performance indices in a second order system.

4. a) The characteristic equation is $\boldsymbol{s^4 + ks^3 + 2s^2 + s + 3 = 0}$; Find the range of 'K' for the system to be stable.
b) Explain the effect of adding a Zero to **G(s)H(s)** on the root loci.

5. Comment upon the stability by drawing Bode plots of the system, $G(s) = \frac{1}{s^2(1 + s)(1 + 4s)}$.

6. a) Define the terms phase margin and gain cross over frequency.
b) Draw the Nyquist plot and assess the stability if open logs transfer function of a closed loop system in $G(s) = \frac{s + 6}{(s + 2)(s - 2)}$

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) Explain controllability and observability.
b) A linear second order single input continuous time system is described by the following set of differential equations.
$\dot{X}_1(t) = -2X_1(t) + 4X_2(t)$
$\dot{X}_2(t) = 2X_1(t) - X_2(t) + u(t)$ Comment on controllability of the system

CODE No.:10BT50102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

REINFORCED CEMENT CONCRETE STRUCTURES - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Design a dog legged stairs for an office building in a room measuring 2.8 m **x** 5.8 m clear. Vertical between the floors is 3.6 m. Width of flight is to be 1.25 m. Allow a live load of 3 kN/m^2. Sketch the details of the reinforcements. Use M20 concrete and Fe 415 steel. Assume the stairs are supported on 230 mm walls at the end of outer edges of landing slabs.

2. Design a combined footing for the two columns of a multistory building. The columns of size 400mm **x** 400mm transmit a working load of 800 kN each and they are spaced at 5m centres. The safe bearing capacity of soil at site is 200 kN/m^2. Adopt M20 grade concrete and Fe 415 grade steel.

3. Design a pile cap on a group of four friction piles each of 230 mm diameter for supporting 350 mm square column carrying an axial load of 1250 kN. Use M 25 Concrete and Fe 415 steel.

4. Design a 'counterfort' of a counter fort retaining wall for the data given below.

Spacing of counterforts	=	3.2 m c/c
Height of embankment	=	7.0 m above GL
Depth of foundation	=	1.2 m
SBC of soil	=	150 kN/m^2
Unit wt of backfill earth	=	16.5 kN/ m^3
Angle of repose	=	30^o

5. Design a roof dome top ring beam of an over head tank of capacity 600 kL.
The materials used are M20 concrete and HYSD steel. Sketch the details of reinforcement.

6. A circular tank of 200 m^3 capacity rests on the ground having a soil with S.B.C of 100 kN/m^2. The tank wall has a flexible joint at the base. Design the tank using M20 grade concrete and Fe 415 grade steel. Free board may be assumed as 300mm.

7. Design the cylindrical wall and bottom slab of a circular elevated water tank of diameter 10m and total height 4m which is to be supported by ring beam of 7.5m diameter. The ring beam is to be supported by six columns equally placed. Use M20 grade concrete and Fe 415 grade steel.

8. a) What are the losses of prestress? Discuss them in brief.
b) Differentiate between pre tensioned and post tensioned members.

CODE No.:10BT50103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

ENGINEERING HYDROLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the various practical applications of hydrology.
b) Describe the various types of precipitation.

2. a) Explain the features and fixing of Non-automatic rain range.
b) Describe various methods of computing average rainfall over a basin.

3. a) Define **Ø**-index and W-index and bring out the difference between them. How is **Ø**-index determined from the rainfall hyetograph?
b) What are the factors to be considered in locating a stream gauging site?

4. a) What is a flow mass curve? How is it constructed?
b) What are the uses of a flow duration curve?

5. a) Define runoff and explain its process. Explain the factors affecting the magnitude of runoff from a catchment.
b) Analysis of annual flood series of a river yielded a sample mean of 1000 cumec and standard deviation of 500 cumec. Estimate the design flood of structure on this river to provide 90% assurance that the structure will not fail in the next 50 years. Use Gumbel's method and assume the sample size to be very large.

6. a) What are envelope curves? How are they prepared?
b) Explain the method of determining the Muskingum parameters K and X of a reach from a pair of observed inflow and out flow hydrographs.

7. a) Explain the following:
i) Darcy's law - its validity ii) Types of aquifers with neat sketches
b) A 30 cm diameter well completely penetrates a confined aquifer of permeability 45 m/day. The length of the strainer is 20 cm. Under steady state of pumping the drawdown at the well was found to be 3.0 m and the radius of influence was 300m. Calculate the discharge.

8. a) What is recuperation test? How is it conducted on the field?
b) A pumping test was conducted in an aquifer to a depth of 15 m where a bed of clay was encountered. GWL was at the surface. Observation wells were located at distances of 3 m and 7.5 m from the pumped well. At a discharge of 3.6 lps from the pumping well a steady state was attained in 25 hrs. The draw downs at the observation wells were found to be 1.65 m and 0.36 m. Compute the transmissibility of the aquifer.

CODE No.:10BT50104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

SOIL MECHANICS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the phenomena of formation and transportation of soils.
b) An undisturbed sample obtained from field weighed 18 kN and its volume was 0.98 m^3. The dry density of the sample was 15.4 kN/m^3 and the specific gravity of solid is 2.70. Determine i) water content ii) void ratio iii) saturated unit weight.

2. a) Explain the salient features of Indian Standard Classification system.
b) The Atterberg limits of a clay sample are liquid limit = 60%, plastic limit = 45% and natural moisture content = 50%.
Determine i) liquidity index ii) consistency index iii) plasticity index.

3. a) State Darcy's law and its validity for flow through soil mass. Distinguish between discharge velocity and seepage velocity. Derive the relationship between them.
b) In a falling heat permeability test on a soil of length L_1, the head of water in the stand pipe takes 5 seconds to fall from 900 to 135 mm above the tail water level. When another soil of length 60mm is placed on the first soil, the time taken for the head to fall between the same limits is 150 seconds. The parameters has a cross sectional area of 4560 mm^2 and stand pipe area of 130 mm^2. Calculate the permeability of second soil.

4. a) Describe the properties and uses of flow net.
b) A sand deposit of 9 m thick overlies a bed of soft clay. The water table is 3 m below the ground level. If the sand above the ground water table has a degree of saturation of 60%, plot the diagram showing the variation of the total stress, pore water pressure and the effective stress. Take G = 2.70, void ratio as 0.70.

5. a) Distinguish between Boussinesq's and Westergaard's theory for stress distribution in soils.
b) A strip load of considerable length and 1.5 m width transmits a pressure of 150 kN/m^2 to the underlying soil. Determine the vertical stress at 0.75 m depth below the footing if the point lies i) directly below the centre of the footing and ii) directly below the edge of the footing.

6. a) List out the various factors that influence the compaction of soils. Show their influence with illustrative sketches of compaction curves.
b) The following data is obtained in a compaction test.

Water content (%)	2.0	4.2	5.5	6.6	7.5	10.0
Wet density, (kN/m^3)	20.2	20.8	21.7	22.0	22.1	22.0

Determine OMC and MDD. Draw zero air voids line. Take G= 2.65.

7. a) Distinguish between compaction and consolidation. Explain the spring analogy for primary consolidation.

b) A 2.5 cm thick sample of clay was taken from field for predicting the time of settlement for a proposed building which exerts a uniform pressure of 100 kPa in the clay stratum. The sample was loaded to 100kPa and proper drainage was allowed from top and bottom in the laboratory. It was seen that 50% of total settlement occurred in 180 seconds. Find the time required for 50% of the total settlement of the building if it is stand on 6 m thick layer of clay which extends from ground surface and is underlain by sand.

8. a) 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 triaxial 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) Supplementary Examinations June - 2014

ENGINEEING GEOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Describe branches in Geology and explain importance of studying Engineering Geology in Civil Engineering studies.

2. Describe the megascopic properties that are useful in identification of minerals with mineral examples. List the minerals of Moh's scale of hardness.

3. Describe about metamorphic rocks and what are the major monuments constructed in east coast of India.

4. Write about classification of faults and add a note on how these is dangerous geological structures in different constructions.

5. Define the following.
   a) Water table and perched water table with a neat sketch.
   b) Causes of Landslides.
   c) Seismic waves.
   d) Elastic Rebound Theory.

6. Explain the principle, procedure and interpretation part of the seismic refraction method and its importance in civil engineering applications.

7. What are Dams and how are they classified? Discuss fully the geological investigations for an arch dam.

8. What are the different types of tunneling? Add a detailed note on the importance of groundwater studies in tunneling.

CODE No.:10BT50201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

POWER ELECTRONICS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the turn on and turn off times of a thyristor.
b) Explain static characteristics of a thyristor with neat sketches.

2. a) Explain the operation of R and RC firing circuit.
b) Explain the operation of Class - D commutation circuit.

3. a) Describe the significance of di/dt and dv/dt in SCRs.
b) SCR's with a rating of 1000V and 200A are available to be used in a string to handle 6kV and 1kA.Calculate the number of series and parallel units required in case derating factor is i) 0.1 and ii) 0.2.

4. a) With the help of circuit diagram and necessary wave forms, explain the operation of single phase half controlled bridge converter with RL load. Derive the load voltage and load current for firing angle(α)=30^0.
b) Discuss briefly the importance of freewheeling diode in converter circuits.

5. a) Explain the operation of single phase fully controlled bridge converter feeding RL load with the help of wave forms. Derive the expression for load voltages. Draw the waveforms for α=30^0.
b) Compare the advantages of 3-phase converter over the single -phase converter.

6. a) Explain the operation of TRIAC with various modes of operation.
b) A single phase full-wave ac voltage controller feeds a load of R=20Ω with an input voltage of 230V, 50Hz. Firing angle for both the thyristors is 45^o.
Calculate i) rms value of output voltage
ii) Load power and input pf
iii) Average and rms current of thyristors.

7. Explain the principle of operation of step-down chopper and also derive output voltage.

8. a) Draw and explain the simple SCR series inverter circuit employing class-A type commutation with the help of important waveforms. State the limitations of this inverter.
b) A single-phase half bridge inverter has a resistive load R=3Ω and D.C input voltage $\mathbf{E}_{dc}$=50V. Calculate;
i) R.M.S output voltage at fundamental frequency.
ii) The output power.

CODE No.:10BT50202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

AC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is an alternator? Explain the principle of operation of an alternator.
b) Calculate the EMF of a 4 pole, 3 Phase star connected alternator running at 1500 rpm from the following data.
Flux per pole = 0.1 Wb, Number of slots = 48, Conductors per slot = 4 and coil-span= 150^{o}

2. a) With relevant phasor diagrams explain the effect of armature reactions for different power factor of loads.
b) Discuss the factors affecting the terminal voltage of an alternator and dram the phasor diagram of an alternator for lagging power factor load.

3. a) With neat diagrams explain determination of regulation by synchronous impedance method.
b) A 3-phase synchronous generator has per phase direct axis synchronous reactance of 1.0 pu and a quadrature axis synchronous reactance of 0.65 pu. Draw the phasor diagram of the machine when operating at full load at a p.f of 0.8 lagging and estimate from there
i) the load angle ii) pu no-load emf. (Neglect armature resistance).

4. a) Bring out the characteristics of two alternators working in parallel. What is the effect of change in excitation and change in mechanical power input on load sharing?
b) The speed regulation of two 500 KW alternators A and B running in parallel are 100% to 104% and 100% to 105% from full load to no load respectively. How will the two alternators share a load of 800 KW and also find the load at which one machine ceases to supply any portion of the load?

5. a) Draw the phasor diagram of synchronous motor. Explain effects of varying excitation on armature current and power factor (plot the curves).
b) Derive expressions for the power developed by the synchronous motor and discuss various conditions.

6. a) Sketch and explain the torque slip characteristics of a single phase induction motor based on two field revolving theory and prove that it cannot produce starting torque.
b) Why the starting torque of a capacitor start induction motor is better than that of a resistance start motor? Explain.

7. a) Explain the working principle and application of AC series motor.
b) What is universal motor? List the merits and demerits of universal motor.

8. a) Explain the construction and working principle of a stepper motor.
b) The resistance and total impedance of a 1-φ fractional horse power series motor are 30Ω and 0.5 H respectively. It draws 0.8 A current and runs at 2000 rpm when connected to a 250 V DC supply. Calculate the speed and power factor when connected to a 250 V, 50 Hz supply and takes the same load current.

CODE No.:10BT50203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

ELECTRICAL POWER TRANSMISSION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the meaning of self-GMD and mutual - GMD.
b) What do you understand by transposition of conductor? Two conductors of a single-phase linen, each of 2 cm diameter are arranged in a vertical plane with one conductor mounted 1 m above the other. A second identical line is mounted at the same height as the first and spaced horizontally 0.25m apart from it. The two upper and two lower conductors are connected in parallel. Determine the inductance per km of the resulting double-circuit line.

2. a) How are transmission lines classified? What do you mean by "Performance of transmission lines"? Explain fully.
b) Explain the physical significance of the generalized ABCD constants of a transmission line? State the units of these constant. Determine these constants for a medium transmission line with nominal - T configuration. Draw neatly corresponding vector diagram.

3. A a 3-φ, 50Hz transmission line has conductance of section 90mm^2 and effective diameter of 1cm and one placed at the vertices of an equilateral triangle of a single 1meter the line is 20Km long and delivers a load of 10MW at 33KVand 0.8p.f . Neglect the capacitance and assume temperature of 20^0 c. Determine the efficiency and % regulation of line.

4. a) Mention the advantages of Bewley's lattice diagram.
b) A surge of 110 kV travels on a line of surge impedance 500Ω and reaches a T junction. The surge impedances of the branch lines are 450Ω and 50 Ω. Determine the reflected and refracted values of currents and voltages.

5. a) Distinguish between a balanced and unbalanced system by means of symmetrical components of vectors.
b) Explain what is meant by:
i) Sequence impedance ii) Sequence networks.

6. a) By mean of an example show how grading of units is done for suspension insulators.
b) Explain about the properties that any insulating materials should posses.

7. a) Discuss the effect of wind and ice on sag.
b) Explain the vibration and vibration dampers.

8. Differentiate between line and underground cables.

CODE No.:10BT50302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

DYNAMICS OF MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Determine the required input torque on the crank of a slider-crank mechanism for the static equilibrium when the applied piston load is 1500 N. The lengths of the crank and the connecting rod are 40 mm and 100 mm respectively and the crank has turned through 45^{o} from the inner-dead centre.

2. a) Explain the gyroscopic effect of pitching and rolling of a ship in the sea water.
b) A ship is pitching through a total angle of 15°, the oscillation may be taken as simple harmonic and the complete period is 32 sec. The turbine rotor weighs 6 tones, its radius of gyration is 45 cm and it is rotating at 2400 rpm. Calculate the maximum value of gyroscopic couple set up by the rotor. If the rotation of the rotor is clockwise looking from left, in which direction will the bow tend to turn while falling? What is the maximum angular acceleration to which the ship is subjected while pitching?

3. a) What is self-locking and self-energizing brake?
b) A band and block brake has 10 blocks and each block subtends an angle of 15^{o} at the center of the wheel. The two ends of the band are fixed to pins on the opposite sides of the brake fulcrum at distances of 40mm and 200mm from it. Determine the maximum force required to be applied on the lever at a distance of 300mm from the fulcrum to absorb 250kW of power at 280rpm. The effective diameter of the drum is 840mm take $\mu = 0.35$.

4. A vertical internal combustion engine has a cylinder bore of 14 cm and a stroke of 16 cm. The speed is 500 rpm. The connecting rod is 82 cm long and the mass of the parts moving with the piston is 22.5 kg. On working stroke, the gas pressure is 22 bar when the piston has moved down wards a distance corresponding to a rotation of 30^{o} of the crank. Determine graphically the velocity and acceleration of the piston for this piston. Also find the turning moment exerted on the crankshaft taking into account the mass inertia of the piston.

5. A spring loaded governor of a Hartnell type has arms of equal length. When the sleeve is in the mid-position, the masses rotate in a circle of diameter 150mm (the ball arms are vertical in the mid-position). Neglecting friction, the equilibrium speed for this position is 360 rpm, the maximum sleeve movement is 30mm and the maximum variation of speed taking account of friction is $\pm$ 6% of the mid-position speed. The mass of the sleeve in 5kg and friction may be considered equivalent to 35N at the sleeve. Assume that the power of the governor is sufficient to overcome the friction by 1% change of speed either way at mid position. Neglecting obliquity effect of arms, determine:

i) The value of each rotating mass
ii) The spring stiffness in N/mm and
iii) The initial compression of the spring.

6. a) What do you mean by primary and secondary unbalance in reciprocating engines?
b) A rotor has the following properties:

Mass	Magnitude	Radius	Angle	Axial distance From 1st mass
1	9 kg	100 mm	0^o	-
2	7 kg	120 mm	60^o	160 mm
3	8 kg	140 mm	135^o	320 mm
4	6 kg	120 mm	270^o	5600 mm

If the shaft is balanced by two countermasses located at 100 mm radii and revolving in planes midway of planes 1 and 2, and midway of 3 and 4, determine the magnitude of the masses and their respective angular positions.

7. a) Distinguish between longitudinal, transversed and torsional free vibrations.
b) A rotor of mass 10 kg is mounted mi-way on a 2cm diameter horizontal shaft supported at the ends by two bearings. The bearing span is 80 cm. Because of certain manufacturing defect, the centre of gravity of the disc is 0.1 mm away from the geometric centre of the rotor. If the system rotates at 3000 rpm, determine, the amplitude of the steady state vibration and the dynamic load transmitted by the bearing. Take E=200 GN/m^2.

8. a) Define the flexibility and stiffness influence coefficients. What is the relation between them?
b) What is a seismic instrument? With neat sketch explain its working principle.

CODE No.:10BT50303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

MACHINE TOOLS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive shear plane angle from fundamental principles in case of Orthogonal cutting.
b) The data obtained during orthogonal cutting were rake angle=10°, Depth of cut=0.5mm, chip thickness is 0.6mm, width of cut is 0.4 mm. Cutting force is 100N, thrust force is 60 N and cutting speed is 100m/min. Calculate coefficient of friction, Shear force, Normal shear force, Shear stress and power required.

2. a) Draw the outline diagram of an engine lathe and describe each part by labeling it.
b) Describe the working procedure of a single spindle automatic lathe machine in detail.

3. a) Distinguish between shaper, planner and a slotter.
b) With the help of neat sketch explain any quick return motion mechanism of shaper.

4. a) Sketch and explain the parts and working of a radial drilling machine.
b) Discuss in detail about jig boring and their types.

5. a) Explain the applications and differences of the following with reference to milling:
i) Straddle milling
ii) Gang milling
b) What are the different types of indexing? Discuss briefly.

6. a) Classify various types of grinding machines and explain about tool and cutter grinder.
b) Explain the factors considered in selection of grinding wheel.

7. a) Differentiate between Lapping and honing processes.
b) Explain buffing and polishing operations.

8. a) Discuss in detail the basic rules of location.
b) Explain any three clamping devices with neat sketches.

CODE No.:10BT50304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

DESIGN OF MACHINE ELEMENTS - I

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the steps involved in design of machine elements?
b) Why does the tensile strength of cast iron decrease as the thickness of part increases?

2. a) Distinguish between *Strength* and *Rigidity*.
b) A stepped rod has a diameter of 200mm for a length of 1m, a diameter of 150mm for a length of 0.8m and a diameter of 100mm for a length of 1m. The rod is subjected to a tensile load of 5kN. Calculate the factor of safety, if the critical stress of the material is 1.2 MPa.

3. A rod is subjected to an axial load which varies from 2.5kN to 8.5kN. The endurance limit and the yield point of the material are, respectively, 150MPa and 350MPa. Taking a factor of safety of 10, determine the diameter of the rod.

4. a) Classify various types of riveted joints and mention their applications.
b) Two lengths of mild steel tie rod having width 200 mm and thickness 12.5 mm are to be connected by means of a butt joint with double cover plates. Design the joint if the permissible stresses are 80 MPa in tension, 65 MPa in shear and 160 MPa in crushing. Make a sketch of the joint.

5. a) What is the difference between ordinary bolt and a stud bolt? Give one application for each of them.
b) A 20kg balancing mass is to be attached to the crank web of an IC engine using two bolts. The speed of the engine is 500rpm. The location of centre of mass of the balancing mass may be taken to be at a distance of 225mm from the axis of the crank shaft. Design the bolts, taking the permissible tensile stress in the bolt material as 60MPa.

6. Design a *sleeve and cotter joint* to connect two rods which are to transmit a load of 40kN. Take the allowable stresses in tension, shear and crushing, respectively as 80MPa, 40MPa and 160MPa. Sketch the designed joint.

7. a) Explain under what circumstances hollow shafts are preferred over solid shafts.
b) A propeller shaft is required to transmit 45 KW power at 500 rpm. It is a hollow shaft, having inside diameter 0.6 times of outside diameter. It is made of plain carbon steel and the permissible shear stress is 84 N/mm^2. Calculate the inside and outside diameters of the shaft.

8. a) What is a key? State the effect of keyway cut into a shaft.
b) Design a rectangular key for a shaft of 50 mm diameter. The shearing and crushing stresses for the key material are 42 MPa and 70 MPa.

CODE No.:10BT50305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

INDUSTRIAL ENGINEERING AND MANAGEMENT

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define the term scientific management and explain clearly how planning is useful to business organization.
b) List Fayol's principles of management.

2. a) Differentiate between rural and urban sites for plant location.
b) Explain the importance of travel chart by taking suitable example.

3. a) Define: i) Work study ii) Method study iii) Time study
b) Determine standard time for the following time study (a cycle of 3 elements)

Element No	Cycles (Time in Min)				PRF
	1	2	3	4	
E_1	14.23	13.99	14.49	14.46	80%
E_2	2.33	1.96	2.45	2.55	110%
E_3	6.71	6.82	7.01	7.00	120%

Allowances = 30%

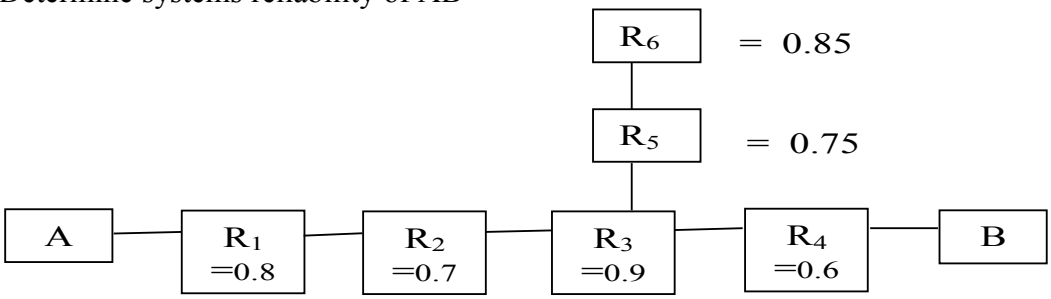
4. a) State and explain various duties of stores manager.
b) Explain the procedure involved in purchasing.

5. a) What is meant by Pareto diagram? Explain the procedure for constructing the Pareto diagram.
b) The following are the mean lengths and ranges of lengths of a finished product from 10 samples each of size 5. The specification limits for length are 200 ± 5cm.

Construct $\overline{X}$ and R charts and examine whether the process is under control and state your recommendations.

Sample No	1	2	3	4	5	6	7	8	9	10
Mean $\overline{X}$	201	198	202	200	203	204	199	196	199	201
Range R	5	0	7	3	4	7	2	8	5	6

6. a) Define: i) Reliability ii) MTBF
b) Determine systems reliability of AB



7. a) What are the entrepreneurship barriers? Explain about various aspects of professional rights.
b) Write about the entrepreneurial moral issues.

8. Discuss in detail functions of HRM.

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CODE No.:10BT50401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

ANALOG COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the demodulation of envelope detector along with choice of time constant.
b) An AM transmitter has an unmodulated carrier power of 10KW. It can be modulated by sinusoidal modulating voltage to maximum depth of 40% without overloading. If the maximum modulation index is reduced to 30%, what is the extent up to which the unmodulated carrier power can be increased without overloading?

2. a) Explain the generation of DSB-SC signal using Ring modulator.
b) What is costas loop? Explain how to detect DSB-SC wave using costas loop.

3. a) Give the time domain and frequency domain representation of SSB.
b) Explain the generation of VSB modulated wave using phase shifting network.

4. a) Explain the detection of FM wave using balanced frequency discriminator.
b) A single tone FM signal is given by $\mathbf{X(t)=10Cos(16\ \pi\ x10^{6}t+20\ Cos\ 2\pi\ x10^{3}t)\ V}$. Find the modulation index, frequency deviation, BW and power associated.

5. a) Explain different types of noise sources in communication system.
b) Explain noise performance of SSB - SC receiver and prove its S/N ratio is unity.

6. a) Classify radio transmitters according to the type of modulation and according to the frequency range involved.
b) With the help of block diagram, explain AM transmitter with modulation at low carrier power level.

7. a) With the aid of the block diagram, explain TRF receiver. Also explain the basic superheterodyne principle.
b) List out the advantages and disadvantages of TRF receiver.

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) Supplementary Examinations June - 2014

ANTENNAS AND WAVE PROPAGATION

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the terms:
i) Retarded potential ii) HPBW
iii) Antenna aperture iv) Beam width
b) Derive the relation between the effective area and gain of antenna.

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 Binomial array? Explain.
b) Compute the directivity of Broad side array consisting of 8 identical isotropic radiators along polar axis spaced λ apart.

4. a) Explain the theory behind the Yagi-Uda array.
b) Derive the expression for the axial ratio and conditions for circular polarization of monofilar axial mode helical antenna.

5. a) Establish and explain the gain and beam width relations for a parabolic reflector and account for its beam shaping considerations.
b) Explain cassegrain feed mechanism in reflector antennas.

6. a) Derive reciprocity theorem for antenna. Show that the transmitting and receiving patterns of an antennas are equal.
b) Establish the mathematical relation for the profiles of a plane convex dielectric lens. Explain its characteristics.

7. List out the modes of propagation and their frequency ranges for radio waves. Show that an approximate estimate for the magnitude of electric field strength at VHF and above is given by

$\left(\frac{240 I \pi h_1 h_2}{\lambda d^2} \right)$

where I - current in the $\lambda / 2$ transmitting aerial

h1,h2 - heights of Tx and Rx antennas
d - direct distance between aerials
λ - wavelength.

Specify the assumptions made for the validity of the above expression.

8. a) Explain the refraction and reflection of sky waves by Ionosphere.
b) Explain Skip distance and MUF. What are the relations 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) Supplementary Examinations June - 2014

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operation of differential amplifier with neat circuit diagram.
b) Perform the DC and AC analysis of dual-input, balanced-output differential amplifier.

2. a) Define CMRR. Obtain expression for CMRR.
b) Determine the output voltage of an op-amp for the input voltages of Vin_1=150**μV**, Vin_2=140**μV**. This amplifier has a differential gain of 4000 and the value of CMRR is 100 and for 10^5.

3. a) Draw the circuits of transresistance and transconductance amplifiers in detail with neat sketches.
b) With neat sketches, explain the working of AC and DC inverting amplifiers.

4. a) Explain the action of a comparator using op-amp. What are its limitations?
b) Design a 1 kHz square wave generator using op-amp with 40% duty cycle. Derive the necessary expressions.

5. a) Explain how an all pass filter can be realized.
b) Design a wide band pass filter having f_l = 400Hz, f_h = 2KHz and pass band gain of four. Determine the Q of the filter.

6. a) Design a monostable multivibrator using 555 timer to get a pulse width of 0.1msec. Draw the circuit diagram with its waveforms.
b) Explain the salient features and various applications of 565 PLL in brief.

7. a) Explain the operation of AM modulator by using IC 1496.
b) Draw and explain the operation of astable multivibrator using 555 IC.

8. a) Explain the various application of IC 1496 in detail.
b) Write short notes on 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 - 2014

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the circuit diagram, function table and logic symbol for a 3- input CMOS NOR gate.
b) What are the parameters that are necessary to define the electrical characteristics of CMOS circuits?

2. a) List out bipolar families and compare them with reference to propagation delay, power dissipation, speed-power product and low level input current.
b) Explain in detail about CMOS/TTL interface.

3. a) Write a VHDL entity and architecture for the following function.

b) Explain procedures in VHDL with an example.

4. a) Explain in detail about simulation.
b) Write a VHDL program in behavioral style to generate a clock with off time and on time equal to 10 ns.

5. a) Explain the working of 3 **:** 8 decoder and write VHDL code.
b) Design the code conversion for 3-bit Gray code to binary code and write VHDL code for this design.

6. Explain the operation of comparators and write VHDL code for the corresponding.

7. a) Design a conversion circuit to convert a T-flip-flop to JK-flip-flop.
b) Design a 8-bit synchronous binary counter with serial enable control.

8. a) Explain the necessity of two-dimensional decoding mechanism in memories.
b) With the help of timing waveforms explain read and write operations of SRAM.

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CODE No.:10BT50421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

ELECTROMAGNETIC THEORY

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Prove that the electric field intensity at any point in free space due to infinite sheet of charge with charge density ρ_s C/m^2 is independent of the distance from the source to the point of interest.
b) Evaluate both sides of the divergence theorem for the electric flux density $D = 2xy\,a_x + x^2\,a_y$ C/m^2 and the rectangular parallel-piped formed by the planes x = 1, y = 0 and 2 and z = 0 and 3.

2. a) Explain Linear, Isotropic and Homogeneous Dielectrics.
b) A coaxial cable contains an insulating material of conductivity **σ.** If the radius of the central wire is **'*a*'** and that of the sheath is **'*b*'**, Find the capacitance and conductance of the cable per unit length.

3. a) Define i) Vector magnetic potential ii) Magnetic scalar potential
b) A circular loop of 3 units radius is centered at the origin in z=0 plane and carries a D.C current of 10 mA, along **φ** direction. Find the magnetic flux density at **(0, 0, ± 4).**

4. a) Express all the Maxwell's Equations in various forms and give their word statement.
b) What do you mean by inconsistency in Ampere's law? Explain with suitable derivation.

5. a) Define phase velocity and group velocity. Describe them with suitable examples.
b) A 1MHz plane wave is propagating in fresh water. At this frequency, losses in water are known to be small such that $\mu_r = 1$, and $\varepsilon_r = 81$. Calculate
i) phase constant ii) phase velocity iii) intrinsic impedance of the uniform plane wave.
Determine electric and magnetic field components of the wave.
Assume the electric field intensity has maximum amplitude of 0.1 V/m.

6. a) Derive suitable expression for transmission coefficient when a plane wave incident at some angle at the interface of two media. Consider parallel polarization only.
b) A uniform plane wave is incident from air onto glass at an angle from the normal of 30^o. Determine the fraction of the incident power that is reflected and transmitted for parallel polarization. Assume glass has refractive index $n_2 = 1.45$.

7. a) Explain the natural and man-made EMI sources.
b) Discuss about pulse power Electro-magnetics.

8. a) Differentiate Direct and Indirect Bonding.
b) Explain different types of grounding techniques.

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

LINEAR AND DIGITAL IC APPLICATIONS

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the working of differential amplifier and derive the expression for CMRR.
b) Explain the DC characteristics of an operational amplifier.

2. a) With a neat diagram, explain the principle of operation of triangular waveform generator using operational amplifier.
b) Sketch the basic circuit using op-amp to perform the mathematical operation of differentiation and explain.

3. a) Explain the operation of Schmitt trigger using 555 timer with its circuit diagram.
b) Draw the circuit of a 565 PLL IC and explain its working.

4. a) Design 2-wide, 2-input CMOS OAI gate. With the help of function table explain the circuit.
b) Design, draw and explain a CMOS transistor circuit which has the following functional behavior $f(Z) = \overline{(A + \overline{B}).(B + C)}$

5. a) Compare CMOS, TTL and ECL with reference to logic levels, DC noise margin, propagation delay and fan-out.
b) What are the typical parts of a TTL data sheet and discuss their importance in circuit design.

6. a) Discuss the various steps in VHDL design flow.
b) What are the various Modeling styles used in VHDL? Explain them in brief with suitable examples.

7. a) Explain the terms Multiplexing and Demultiplexing. Implement full adder circuit using Multiplexer.
b) What is an ALU? Explain the functions performed by the 74x181, 4-bit ALU.

8. a) Design an ALU with VHDL program.
b) Write a short note on PLDs.

CODE No.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

PRINCIPLES OF COMMUNICATIONS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail about each block of basic electrical communication system with neat block diagram.
b) Find the Fourier Transform of i) Signum function ii) Unit Step function.

2. a) Draw the one cycle of AM wave and calculate the modulation index of it in terms of V_{max} and V_{min} voltages.
b) A modulating signal consists of a symmetrical triangular wave having zero DC component and peak to peak voltage of 12V. It is used to amplitude modulate a carrier of peak voltage 10V. Calculate the modulation index and the ratio of the side lengths L_1/L_2 of the corresponding trapezoidal pattern.
c) The **rms** antenna current of an AM transmitter is 10 A when un-modulated and 12 A when sinusoidally modulated. Calculate the modulation index.

3. a) Explain the indirect method of generation of FM wave.
b) Explain about the demodulation of FM wave using zero crossing detector.

4. a) What is the condition for aliasing? How can you overcome it?
b) Explain about TDM.

5. a) Explain Delta modulation and explain different noises present in DM.
b) Compare PCM and ADPCM schemes.

6. a) What is M-ary FSK? Derive the average probability of error for coherent M-ary FSK.
b) Distinguish between QPSK and MSK.

7. a) Consider a telegraph source having two symbols, dot and dash. The dot duration is 0.2s. The dash duration is 3 times the dot duration. The probability of the dot occurring is twice that of the dash, and the time between symbols is 0.2s. Calculate the information rate of the telegraph source.
b) What is the significance of coding? Explain the principles of any one type of source coding.

8. a) A (7,4) block code is generated by using a generator matrix G

$$G = \begin{matrix} 1 & 0 & 0 & 0 & : & 1 & 1 & 1 \\ 0 & 1 & 0 & 0 & : & 1 & 1 & 0 \\ 0 & 0 & 1 & 0 & : & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 & : & 0 & 1 & 1 \end{matrix}$$

Find the following:
i) Parity check matrix
ii) Code vectors for a message block (1001) and (1110)
iii) Show how a single error can be corrected.
b) Define minimum distance of a code word and weight of the code word.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Briefly describe the asymptotic notation of algorithms.
b) Write the algorithm for finding the number of binary digits for a positive decimal integer.

2. a) Explain BFS and DFS.
b) Explain the differences between BFS and DFS.

3. a) Explain any two applications for divide and conquer method.
b) Write an algorithm for merge sort and explain 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) What is the principle of dynamic programming? Explain with example.
b) Explain string editing problem. Give the recurrence relation for the value of the optimal solution when the problem is to be solved using dynamic programming. For X=(b,b,a,b,a) and Y=(a,b,a,a) give the matrix of the values of computed in bottom up manner.

6. a) Draw the state space tree for m coloring when n=3 and m=3.
b) Solve the 8-queens problem using backtracking.

7. a) Define Branch and Bound technique, explain it with an example.
b) Differentiate between Dynamic Knapsack and Branch and Bound Knapsack problem.

8. a) State and Explain cook's theorem.
b) Write a non deterministic Knapsack algorithm.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

MICRO-PROCESSOR AND INTERFACING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between 8085 and 8086 microprocessors.
b) What do you mean by pipelined architecture? How it is implemented in 8086?

2. a) Write an ALP in 8086 to find a maximum number in the array of 10 numbers.
b) A set of ten BCD numbers are stored in memory locations starting from 2500H . Write an ALP to convert each BCD number to binary hex number and store the result in memory locations starting from address 4000H.

3. a) Draw and discuss the typical minimum mode operation in 8086.
b) With neat diagram explain the architecture of the 8257.

4. a) What do you mean by BSR mode? Explain the BSR mode of operation.
b) What is the use of stepper motor? Write the instruction sequence to move the stepper motor 10steps in clock wise and 12 steps in anti-clock wise direction.

5. a) Write briefly about DOS and BIOS interrupts and give the necessary examples.
b) With the help of a block diagram explain the function of 8259.

6. a) Explain the working principle of RS232C.
b) Write an ALP to transmit 100 bytes of data string starting at location 2000**:**5000H.

7. a) Draw and explain the flag register of 80286 microprocessor.
b) What are the salient features of protected virtual memory?

8. a) Distinguish between microprocessor and microcontroller.
b) Draw and explain the formats and definitions of the IE and IP registers.

CODE No.:10BT50503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

DATABASE MANAGEMENT SYSTEMS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discriminate the File system versus a Database Management System.
b) What are the advantages of DBMS?

2. a) Describe the relationship between Entities, Attributes, Entity sets and key.
b) Write short notes on the following and give examples to each
i) Key constraints
ii) Participation constraint
iii) Weak entity

3. Consider the following relations containing airline flight information:
Flights(flno:integer, from:string,to:string,distance:integer, departs:time, arrives:time);
Aircraft(aid:integer, aname:string, cruisingrange:integer)
Certified(eid:integer,aid:integer)
Employees(eid:integer,ename:string,salary:integer)
Write the relational algebraic expression for the following
i) Find the total number of employees whose salary is less than 100000
ii) Find the names of pilots certi_ed for some Airbus aircraft
iii) Find the flno of flights from Delhi to Newyork
iv) Find the eid of employee who has certified for more than three flights
b) Explain the cross product and rename.

4. a) Explain about designing active databases.
b) Describe about Intersect and Except operators.

5. a) Explain 1NF, 2NF and 3NF with an example.
b) Write short notes on schema refinement in database design.

6. a) What is a transaction? In what ways is it different from an ordinary program?
b) What is serializable schedule, recoverable schedule and strict schedule?
Give examples to each.

7. a) Explain the shadow paging.
b) Explain time stamp protocol.

8. a) Explain the following:
i) stripping ii) advantages of RAID iii) mirroring in RAID levels.
b) Explain the difference between each of the following.
i) Primary versus secondary indexes
ii) Clustered versus unclustered indexes

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

OPERATING SYSTEMS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the Operating System structure of Unix and MS-DOS.
b) Explain how protection is provided for the hardware resources by the operating system.

2. Explain the following:
a) Context switch.
b) Dispatcher.
c) Various multi-thread models.

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 is a safe state? Explain the various data structures used in the Bankers' algorithm.
b) Discuss the deadlock recovery methods in detail.

5. a) Explain FIFO, Optimal, LRU and Second Chance Page Replacement algorithms with the following reference string.1,2,3,4,1,2,5,1,2,3,4,5.
b) Explain Memory management in Linux

6. a) Explain various file allocation methods in detail.
b) Give short notes on Linux file system and Windows XP file system.

7. What is disk scheduling? Explain the different disk scheduling algorithms with examples.

8. a) Describe the goals of protection in Operating systems.
b) Discuss common protection threats.

CODE No.:10BT51001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

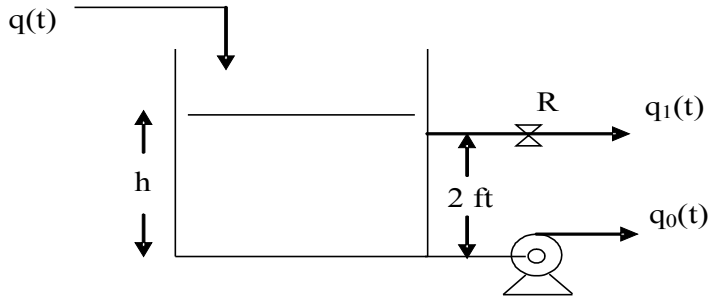
PROCESS CONTROL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Find a transfer function **H(*s*)/Q(*s*)** for the liquid level system shown in figure. The tank operates about the steady state value of (i) h_s = 1ft (ii) h_s = 3ft. The pump removes water at a constant rate of 10cfm. The area of A = $2ft^2$ and resistance of R = 0.5 ft/cfm.



b) Develop the closed-loop responses for set point and load changes in generalized feedback control system.

2. a) Explain in detail about single speed floating control with suitable example.
b) Discuss about two-position control with example. Why differential gap is used in the system?

3. a) Explain pneumatic force type proportional integral controller.
b) A type - J thermocouple (TC) with a 0^oc reference is used to control temperature between 100^oc and 200^oc. Design a PD controller with a 40% band and a 0.5 min rate time. The final control element requires a (0-10) V range. The period of the fastest expected change is estimated to be 8 seconds. (Note: Amplify the low thermocouple voltage with a gain of 1000 to a more convenient value than the thermocouple mV output. The TC produces a voltage of 5.27mV at 100^oc and 10.78mV at 200^oc)

4. a) Differentiate simple performance criteria and integral performance criteria. and also discuss a set of simple heuristic rules you could use to select the most appropriate type of feedback controller for a particular system.
b) There are three liquid tanks, which are connected in non-interacting fashion. The head level in the bottom tank is controlled by three mode controller. The transfer function of the process is **$G_P(s) = 6/((2s+1)(4s+1)(6s+1))$.** Determine the various tuning parameters of the controller using ultimate period technique.

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) Explain the characteristics of control valve.
b) List different types of valves and elaborate on ball valves.

7. a) Identify a control scheme which requires one measurement and provides more than one manipulation. Explain it with an example.
b) Derive the general expression for **$G_C(s)$** and **$G_{SP}(s)$** of feed forward controller.

8. a) Write short notes on heat exchanger.
b) Explain a control scheme of binary distillation column.

CODE No.:10BT51002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

INDUSTRIAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the measurement of length, angle and Gauge blocks.
b) Explain any one optical methods of measuring length and distance measurement.

2. a) Describe how Stroboscopic method is used to measure the speed of a rotating body.
b) Explain the principle and working of a Magnetostrictive type Torsion Meter.

3. a) Explain how sensitivity can be increased by using inclined tube manometer. Describe its construction, advantages and limitations.
b) Discuss in detail about Ionization Gauge with a neat diagram.

4. a) Write short notes on Ultrasonic type Flow Meters.
b) Discuss about Area type Flow Meters.

5. a) Write short notes on Saybolt's viscometer and rotameter type viscometer.
b) Discuss the working of buoyancy effect densitometer.

6. a) What are the factors that affect the performance of resistance thermometer? Explain.
b) Why is a cold junction compensation necessary in temperature measuring schemes using thermocouples? What is the recent trend in making such compensation?

7. a) Explain the resistance type level gauging.
b) Describe the magnetic float type level controller with a neat sketch.

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) Supplementary Examinations June - 2014

SOFTWARE ENGINEERING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is Software engineering? Explain its Layered technology.
b) Explain Process assessment with neat diagram.

2. When emergency changes have to be made to systems, the system software may have to be modified before changes to the requirements have been approved. Suggest a model of a process for making these modifications which ensures that the requirements document and the system implementation do not become inconsistent.

3. a) Explain data flow diagram of an insulin pump.
b) Explain the components of a CASE tool for structured method support.

4. Effective modular design is built through application of the following properties
i) Functional Independence
ii) Cohesive functioning
iii) Coupling /Decoupling
Explain how the above mentioned properties will be useful for effective modular design by showing an appropriate example.

5. 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) Can a program be correct and still not be reliable? Explain.
b) Explain six sigma strategy for software quality assurance.

7. Maintaining quality graduates at higher education become one of the strategies in order to cope with the unprecedented competitions among higher Institutions. Passing rate is an important indication to what extent the students achieved the learning outcomes for specific subjects and the programme outcomes in general. There are several factors which attributes for achieving lower passing rate at higher education. Apply the Fishbone Diagram methodology over higher education to identify factors which affects passing rate at basic engineering units.

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

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

COMPUTER GRAPHICS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the construction and functioning of the following input devices, keyboard, mouse and joystick.
b) Explain the basic operation of a direct view storage tube.

2. a) Write a DDA line algorithm for representing a line in third quadrant.
b) Transform a point P(40,30) given in a window (10,100,10,60) corresponding to (w1,wr,wb,wt) in world coordinate system to a view point (30,150,30,90) (v1,vr,vb,vt) on screen.

3. a) What are the matrix representations of
i) translation ii) rotation iii) scaling transformation techniques
b) Explain about the shear and composite transformations.

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) Explain Hermite method of curve generations.
b) Discuss the necessary factors contributing to intensity calculations. Give basic illumination models.

6. a) Briefly describe about transformation principles and basic transformations in detail.
b) Illustrate the concept of 3D-Transformations in viewing with proper diagrams.

7. a) Describe a recursive flood-fill algorithm.
b) Given 4 control point P0,P1,P2,P3 express the Bezier curve parametric equation in terms of t. Show that the starting slope of the curve is parallel to line P0,P1. What do you understand by converse hull of a Bezier curve? Take 4 points and draw the converse hull.

8. a) Develop a transformation matrix for finding perspective projection of point (x, y, z) onto the place z = d.
b) Compare and contrast between 2D and 3D animation and discuss the same in detail.

CODE No.:10BT51301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

ADVANCED CONTROL SYSTEMS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. $\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \\ \dot{x}_3 \end{bmatrix} = \begin{bmatrix} 0 & 1 & 0 \\ -2 & -2 & -1 \\ 0 & 0 & -2 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \\ 1 \end{bmatrix} u \quad and \quad y=[3 \quad 1 \quad 0] \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}$

Determine the canonical form of state model.

2. State model of a system is given by

$$\begin{bmatrix} \dot{X} \end{bmatrix} = \begin{bmatrix} 4 & 0 & 1 \\ 4 & -2 & 2 \\ 1 & 2 & -3 \end{bmatrix} \begin{bmatrix} x1 \\ x2 \\ x3 \end{bmatrix} + \begin{bmatrix} 2 \\ 2 \\ 0 \end{bmatrix} and \quad y = \begin{bmatrix} 1 & 2 & 0 \end{bmatrix} \begin{bmatrix} x1 \\ x2 \\ x3 \end{bmatrix}$$

Determine whether the system is completely controllable and observable.

3. What is dead-zone? Derive the describing function of dead-zone 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. Explain the Lyapunov's stability analysis of the dynamical systems.

6. $\dot{X} = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix} x + \begin{bmatrix} 1 & 0 \\ 0 & 1 \\ 1 & 1 \end{bmatrix} u$; design a linear state variable feedback such that the closed loop poles are located at -1, -2, and -3.

7. Find optimal control law for the system

$$\dot{X} = \begin{bmatrix} 0 & 1 \\ 1 & 1 \end{bmatrix} X + \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix} u$$

With performance index $J=\int_0^\infty (x_1^2 + u_1^2 + u_2^2)dt$

8. Explain minimization of functions with relevant characteristics.

CODE No.:10BT51302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

PROCESS CONTROL

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define degrees of freedom. Discuss the elements of process dynamics.
b) Explain about the characteristics of liquid system.

2. a) Compare PI, PD and PID Controllers.
b) With an example, explain how offset error in proportional controller occurs. Suggest a way to overcome the offset error.

3. a) Derive the response of first order instrument for step input.
b) Explain briefly about different temperature measuring elements.

4. a) Explain with a neat sketch, the working principle of a displacement type pneumatic proportional controller. Discuss the effect of adding negative feedback.
b) With necessary diagrams, describe a hydraulic integral controller. Explain how integral time can be adjusted.

5. a) Describe the Ratio control configuration with an example.
b) Explain the sliding stem control valves.

6. a) Discuss in detail about fired heaters.
b) Explain in detail about steam plant control.

7. a) Discuss in detail about stability of exothermic reactors.
b) Explain (i) chemical equilibrium (ii) reaction rate.

8. Explain in detail about instrumentation and control relevant to petrochemical industry.

CODE No.:10BT51502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

OBJECT ORIENTED SOFTWARE ENGINEERING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is Software and explain the changing nature of software?
b) Explain the roll of Process framework in software.

2. a) Describe what is COCOMO. Give an example. How to estimate cost using COCOMO? How is it different from Putnam Model?
b) Explain in short Software Quality Assurance (SQA) plan.

3. a) What is REVL in COCOMO II? Give the size equation of REVL.
b) Write a note on Formal Technical reviews.
c) What are the 5 aspects of CMM?

4. a) What is a viewpoint? Discuss the statement "Different viewpoints on a problem are essential".
b) Write briefly a note on Class Based Modeling.

5. a) Define software design. How the quality of a good design is assessed?
b) Give a good and bad software design for any particular problem.

6. a) Explain the art of debugging used in software engineering.
b) Describe the different object oriented testing methods.

7. a) Discuss clearly about risk projection.
b) Distinguish between generic risks and product risks.

8. a) Explain in detail the evolving role of Software.
b) Give a classic scenario where Waterfall Model would be beneficial. Also explain why it's better than other models.

CODE No.:10BT52303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

BASIC INDUSTRIAL AND ENVIRONMENTAL BIOTECHNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Write in detail the commercial production of Phenylalanine with the help of a flow diagram.

2. Discuss in detail the production process of steroids.

3. Explain the commercial production of Cellulases and applications.

4. Write a short note on:
   a) Monoclonal antibodies.
   b) Insulin.

5. What are the characteristic features of Biopolymers? Explain different stages in the production of Biopolymers.

6. Write about packed bed reactor. Add a note on its importance in waste water treatment.

7. Compare and contrast between Bioventing and Biosparging.

8. What are xenobiotic compounds? Discuss about Biodegradation methods for xenobiotics.

CODE No.:10BT52304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

HEAT TRANSFER IN BIOPORECESSES

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Classify heat flow processes? Explain the basic mechanisms.
b) A flat furnace wall is constructed of a 114 mm layer of sil-o-cel brick, with a thermal conductivity of 0.138 w/m.k, backed by a 23 mm layer of common brick of conductivity 1.385 w/m.k. The temperature of the inner face of the wall is 760 and that of the outer face is 77°C. Calculate the heat loss through this wall in w/m^2.

2. a) Explain unsteady state heat conduction through semi infinite slab and sphere.
b) A 15 cm schedule 40 steam main carries saturated steam at 10.7 bar (gauge) and the temperature is 190°C. The inside and outside diameters of the pipe are 15.4 cm and 16.8 cm respectively. The thermal conductivity of the pipe wall is 51 W/m°C. The pipe is insulated with a 10 cm thick fiber glass blanket (k = 0.072 W/m°C). If the outer surface temperature of the insulation is 41°C, calculate the rate of heat loss over a 10 m section of the pipe.

3. a) Apply Buckingham Pi theorem and identify the dimensionless groups used in forced convection heat transfer.
b) A fan blows air over a convective heat exchanger in a room heater, resulting in a convective heat transfer coefficient 1.136 $kW/m^2.k$. The surface temperature of heat exchanger may be considered constant at 65°C and the air is at 20°C . Determine the heat exchanger surface area required for 8.8 kW of heating.

4. Explain Grashoff number significance in natural convective heat transfer.

5. Derive an expression for determining the rate of heat transfer through the thick wall of a hollow cylinder. Also, find the temperature profile and its nature.

6. Develop the general form of empirical relations connecting different dimensionless numbers in case of natural convection, using dimensional analysis.

7. Discuss the operation and advantages of a multiple effect evaporator with neat sketch.

8. Describe the methods of continuous sterilization.

CODE No.:10BT52305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

BIOCHEMICAL REACTION ENGINEERING

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) A certain reaction has rate given by $-r_A=0.005\ CA^2$ mol/cm^3.min. If the concentration is to be expressed in mol/liter and time in hours, what would be the volume and units of the rate constant?

b) The pyrolysis of ethane proceeds with an activation energy of about 300 kJ/mol. How much faster is the decomposition at 650°C than at 500°C?

c) Experiment shows that the homogeneous decomposition of ozone proceed with a rate $rO3=K[O3]^2[O2]^{-1}$.

i) What is the overall order of reaction?

ii) Suggest a two-step mechanism to explain this rate and state how you would further test this mechanism.

2. The first order reversible liquid reaction A<=>R, C_{A_0}= 0.5mol/lit, C_{R_0}=0, take place is a batch reactor. After 8 minutes, conversion of A is 33.3% while equilibrium conversion is 66.7%. Find the rate equation for this reaction.

3. Pure gaseous A at about 3 atm and 30°C (120 m mol/liter) is fed into a 1 liter mixed flow reactor at various flow rates. There it decomposes and the exit concentration of A is measured for each flow rate. From the following data find a rate equation to represent the kinetics of the decomposition of A. Assume that reactant A alone affects the rate.
The stoichiometry is given by A ⟶ 3R.

$V_o$liter/min	0.06	0.48	1.5	8.1
Co m mol/liter	30	60	80	105

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 $\mathbf{i^{th}}$ reactor is T_i.

5. a) Discuss about the influence of cell age distribution on growth kinetics.

b) Mention the various types of inhibition. How do you plot operating diagrams for substrate inhibition growth?

6. A desired liquid phase reaction ,

$$A + B \rightarrow R + T, \quad \text{rate} = \mathbf{k_1 C_A C_B^{0.3}}$$

is accompanied by an unwanted side reaction,

$$A + B \rightarrow S + U, \quad \text{rate is } \mathbf{k_2 C_A^{0.5} C_B^{1.8}}$$

Which of the following contact patterns provide favorable product distribution and why?

a) C_A and C_B both high, b) C_A and C_B both low and c) high C_A , low C_B

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:

$$A \xrightarrow{1} R \xrightarrow{2} S \begin{cases} K_1 = 30e^{-20000/RT} K = \left[\min^{-1}\right] \\ K_2 = 1.9e^{-15000/RT} R = 8.314 J/mol.K \end{cases}$$

Determine the optimum temperature to give $\mathbf{C_{R\ max}}$ and run time to use and the corresponding conversion of A to R.

8. a) Discuss the F-curve and C-curve .

b) A specially designed vessel is to be used as a reactor for a first order liquid reaction since flow in this vessel is suspected to be non -ideal, trace tests are conducted and the following concentration represent the response at the vessel outlet to a delta-function tracer input to the vessel inlet. What conversion is a mixed flow reactor employing the same space time is 82.18%.

Time t, sec	10	20	30	40	50	60	70	80
Trace Concentration	0	3	5	5	4	2	1	0

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

THEORY OF COMPUTATION

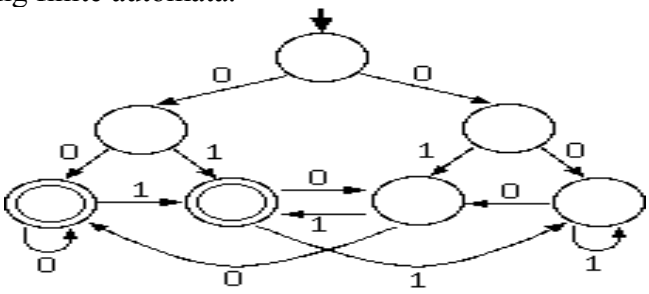
[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Construct DFA which accepts all the strings beginning with one that one is interpreted as binary representation of an integer is congruent to zero modulo 5.
b) Construct DFA which is equivalent to NFA for the set of all strings over {**a, b**} having **aba** as a substring.

2. a) Minimize the following finite automata.



b) Design a Moore & Mealy Machine to determine the residue mod 4 for each binary string treated as integer.

3. a) Construct NFA for the given Regular Expression $(11 + 0)^* (00 + 1)^*$
b) Check whether the following languages are regular or not
i) $L = \{a^{2n} | n > 0\}$ ii) $L = \{0^{n^2} | n \geq 1\}$

4. a) Construct NFA for the following Grammars
i) S→Aa/Bb , A→Aa/a , B→Bb/b ii) S→A0/B1 , A→A0/0 , B→B1/1.
b) Check whether the given grammar is Ambiguous or not and derive "**aabbabbaba**" using **LMD or RMD S→ASA/ASB/BAS/A/B, A→AS/SA/a/aS, B→b/BS/SB/bS.**

5. a) Construct Push Down Automata to recognize the Language **L ={WW^R / W in {0,1}}.**
b) Formally define acceptance of Push Down Automata by empty stack and final state.

6. a) Define the pushdown automata. Discuss its applications.
b) Give the rules for constructing a grammar G from the given **PDA M={Q, Σ, τ, δ, q0, F)** such that L(G)=L(M).

7. a) What is Turing machine? Explain the working of Turing machine with neat diagram.
b) Explain recursive and recursively enumerable languages.

8. a) Explain about P and NP Problems.
b) Explain about Undecidability of PCP problem.

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CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

COMPUTER NETWORKS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Compare OSI and TCP/IP reference models.
b) What are the design issues for a computer network?

2. a) Explain Mobile Telephone System with neat diagram.
b) Write short notes on Guided Transmission Media with neat diagram.

3. a) Explain the Hamming code with examples.
b) Write short notes on HDLC.

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. a) Give IP Header Format.
b) Explain ICMP Protocol.

6. a) Give the format of UDP header and explain different fields. What are the applications which prefer UDP over TCP?
b) Give the format of TCP header and explain different fields.

7. Explain the working of e-mail system.

8. Differentiate between substitution and transposition techniques in network security.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

OBJECT ORIENTED PROGRAMMING

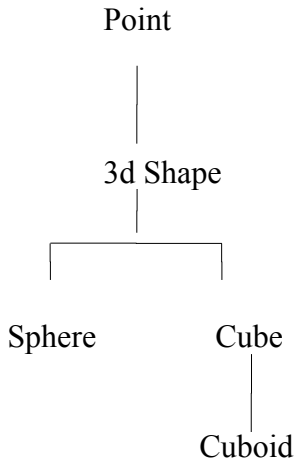
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about dynamic memory allocation and deallocation in C++.
b) What are inline functions and friend functions?

2. a) Write a C++ program to implement following class hierarchy.



The 3d shape should be an abstract class. The function get Volume() and draw() are implemented virtually.
b) Extend the above program to calculate the area of various shapes.

3. a) Write a simple JAVA program to find the biggest of three numbers.
b) Illustrate the use of **this** keyword by writing the pseudo code in JAVA.

4. a) Write a program to create interface A in this interface we have two method meth1 and meth2. Implements this interface in another class name MyClass.
b) Create an outer class with a function display, again create another class inside the outer class named inner with a function called display and call the two functions in the main class.

5. a) Write a program for example of try and catch block. In this check whether the given array size is negative or not.
b) Write a program to illustrate sub class exception precedence over base class.

6. a) How does multithreading differ from multitasking?
b) How can **u** pass the parameters to applets?

7. a) What is an event? What are event sources and event listeners?
b) What are the user interface components in JAVA?

8. a) Write a sample program demonstrating the JScrollPane.
b) Briefly explain procedure to use tabbed pane in swings with an example.

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

COMPUTER NETWORKS

[Electronics and Communication Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Compare OSI and TCP/IP reference models in terms of timing and type of service.
b) What are the design issues for a computer network?

2. a) Compare guided and unguided media.
b) Explain the coaxial cable and Twisted pair cables.

3. a) Explain the data link layer in the Internet.
b) How data link layer is different from Transport layer?

4. a) What is the need for multiple access ?
b) What is the need for carrier sensing ?
c) Compare Pure Aloha and Slotted Aloha in terms of efficiency.

5. a) Differentiate between datagram subnet and virtual circuit subnet.
b) What are the techniques used to achieve the good QOS?

6. Explain the use of socket call by using an Internet file server as an example.

7. a) What are the protocols used for E-mail? Explain how they work.
b) What is the difference between static and dynamic web document?

8. a) What is the difference between Bluetooth and IEEE 802.11 standards?
b) Explain the infrastructure and adhoc mode operation of IEEE 802.11.

CODE No.:10BT70101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

REMOTE SENSING AND GIS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the relationship between photo and ground coordinates and explain the importance.
b) A distance of 119.4mm is scaled on a photograph for which the focal length is 210mm. The corresponding distance of 27.2mm is scaled on a map that is to a scale of 1 in 50000. The area in question lies at an elevation of 100m above sea level. Determine the flying height above MSL when the photograph was taken.

2. a) What are the essential components of Remote sensing system?
b) What are the advantages and disadvantages of using remote sensing system?

3. a) Explain in detail the different platforms used in remote sensing.
b) Calculate the orbital period for satellite which is orbiting the earth at an altitude of 817km from the earth's surface. Consider the Earth's radius = 6.38×10^{6} m, Universal gravitational constant = $6.67\times10^{-11}NM^{2}/Kg^{2}$ and mass of the central body is 5.98×10^{24} kg.

4. a) What are the different techniques of graphic representation of spatial data?
b) What are the basic requirements of GIS?

5. a) Mention the necessity of map projection. Explain about conic and planar projections.
b) What are the possible errors incurred in digitization?

6. a) Differentiate between spatial and attribute data. Describe about the integrated analysis of the two data.
b) Explain about computational analysis methods.

7. a) Describe watershed management on the basis of rainfall and run-off relation.
b) Explain the role of RS-GIS in sustainable watershed management.

8. a) Explain how RS-GIS help in identifying sites for augmenting ground water.
b) What is Fluvial geomorphology? Explain how it is related to watershed management.

CODE No.:10BT70102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

ENVIRONMENTAL ENGINEERING - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss briefly the necessity of replacing the conservancy system by the water carriage system.
b) State various types of water-carriage system and briefly describe their relative advantages and disadvantages.

2. a) How do you estimate quantity of flow in sewers? For a specific area explain what data you require to estimate flow in sewers.
b) List commonly used sewer appurtenances in sewer construction. With help of sketches explain the functions of two of those appurtenances.

3. a) Differentiate between BOD and COD. Explain the importance of BOD and COD ratio while deciding the treatment options.
b) The BOD of a wastewater sample incubated for 3 days at 27^0C is 270 mg/l. Find the 5 day BOD of the sample at 30^0C.

4. a) What is the difference between preliminary, primary and secondary treatment?
b) Design a suitable grit chamber for the removal of a particle with a diameter of 0.2mm. The specific gravity of the grit is 2.6. The rate of flow of sewage is 25MLD. Assume, if necessary, any other date appropriately following the guideline.

5. a) Differentiate the aerobic and anaerobic process in sewage treatment.
b) Design a single stage trickling filter using NRC equations for the following data: wastewater flow from a sugar industry : 3.5 Mld; Recirculation ratio : 1.5
BOD of the raw wastewater: 2855 mg/l; BOD of the final effluent desired: 250 mg/l.

6. a) What is sludge condition and dewatering? Explain any one of the methods of sludge dewatering.
b) What is the mechanism involved in the process of removal of pathogenic bacteria from sludge?

7. a) What are the zones of pollution in a river or a stream? Explain each in brief.
b) Design a septic tank for a community with a population of 75 numbers. The sewage flow is 165 liters per person per day. The desludging period is 2 years. Assume the length to width ration of 3:1.

8. a) Differentiate between municipal and hazardous solid waste. Explain how you plan for safe disposal of hazardous wastes.
b) Present a flow chart to explain the different steps involved in handling solid wastes in municipal areas. Also, describe the practical problems associated with each of these stages.

CODE No.:10BT70103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

STEEL STRUCTURES - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Design main section of a plate girder section to carry a uniformly distributed load of 100 kN/m over a span of 20m. A full lateral support is provided to the compression flange.

2. Design the central section of welded plate girder using 410 steel. Lateral bracings are provided at 3 m interval. The span of the girder is 30 metres and subjected to service load of 27 kN/m and two concentrated loads 600 kN at one third span points.

3. Design I- section purlin for an industrial building roof situated in Chennai for the following data.

Distance between c/c of trusses	= 5 m
Spacing of purlins c/c	= 1.5m
Span of truss	= 8 m
Intensity of wind pressure	= 1.5kN/m^2
Weight of galvanized sheets	= 150 N/m^2
Yield stress of steel	= 250 MPa

4. a) Explain the various types of tubular steel sections with their suitability in industrial buildings.
b) Discuss the salient design features of tubular steel sections used in the steel industries.

5. Design a simply supported gantry girder to be used in an industrial building for the following data.

Crane capacity	= 180 kN
Weight of Crab	= 45 kN
Weight of Crane (excluding crab)	= 180 kN
Minimum clearance between crane hook and gantry girder	= 1.2 m
Wheel base	= 3 m
Distance between c/c of gantries	= 25 m
Distance between c/c of gantry columns	= 6 m
Crane type	= M.O.T.

Sketch the longitudinal elevation of the plate girder.

6. Design an overhead rectangular pressed steel tank for a capacity of 50000 liters. The tank is supported on 6 columns and the height of staging is 12 m. Pressed steel plates of size 1.25 **x** 1.25 m are available. Take basic wind pressure intensity of 1.5kN/m^2.

7. Design a simply supported composite beam to support the slab of a building 12 m **x** 27 m with beams spaced at 4.5 m centre to centre. The thickness of the concrete slab is 125 mm, consider a floor finish load of 0.5 kN/ m^2 and live load of 3 kN/ m^2.
Grade of concrete M20.

8. A portal frame with both ends hinged consists of left column of 4m height, right column of 3m height and beam of 5m span. Plastic moments of left column and the beam are 2 M_p and that of right column is 1.5 M_p. It is subjected to a horizontal load of $w_u/2$ at beam level and a vertical load of w_u at 3m from left end of beam. Determine the collapse load and draw plastic BMD.

CODE No.:10BT70104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

TRAFFIC ENGINEERING AND MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the equation for maximum flow by using the linear relationship between speed and concentration.
b) What are the objectives of spot speed studies and how are they carried out?

2. a) Differentiate between running speed and journey speed and also mention the objectives of spot speed studies.
b) The spot speeds at a particular location on an express way are known to be normally distributed with a mean of 80 K.P.H. A new radar speedometer was bought by Traffic Department and a set of 100 observations of speeds was taken. The mean speed observed was 77.3 K.P.H. and the standard deviation was 15 K.P.H. Is there any evidence to prove that:
i) The new speedometer might have been faulty
ii) The new speedometer is showing lesser speeds than actual.

3. a) What are the traffic characteristics to be considered to assess the level of service of any urban roads? Explain them with their characteristic influence on traffic.
b) Discuss the different types of on street and off street parking facilities provided and state the design standards to be met with.

4. At an intersection formed by meeting of a North-South road and an East- West road, a three phase signal with exclusive right turning phase from North and South is to be designed. Each of the North and South approaches have exclusive right turning lane and two lanes of 3.50 m for straight and left flows. The radius of right turning is 20 metres. Right turning from East and West is not permitted at the intersection. The total width of East -West Road is 12m. The traffic flow in pcu/hour is as follows:

From	**North**			**East**		**South**			**West**	
To	E	S	W	S	W	W	N	E	N	E
Flow	70	550	150	60	300	180	460	150	80	400

Provide 3 seconds for amber, 4 seconds for inter green. Give the phasing diagram and timing diagrams for each phase and compute actual green times adopting Webster's method of isolated signal design.

5. a) What is Noise pollution? What are the detrimental effects of traffic noise on the environment?
b) What are the various measures for controlling air pollution from road traffic?

6. With neat sketch discuss the various traffic signs used in our country.

7. a) Explain the principles of road safety audit.
b) What are the various causes of road accidents?

8. Write Short notes on
a) Intelligent Transport System
b) Traffic forecasting techniques
c) Exclusive bus lanes and traffic calming.

CODE No.:10BT70108

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

ENIVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define EIA. Discuss the purpose of conducting EIA.
b) What are draft and final impact statement?

2. a) Explain main stages in EIA process.
b) Discuss the role of public participation in EIA process.

3. Discuss the important aspects of assessment of impacts of any developmental project on surface water and air environments.

4. a) Explain various features of impact prediction models related to water quality.
b) Describe the impacts and mitigation measures of noise pollution.

5. a) Write in detail the various impact of Deforestation.
b) Write the various impacts of any project on wild life habitat.

6. a) Discuss how far the various environmental legislations are effective in controlling and protecting our environment.
b) Write the method of writing the Environmental Audit Report.

7. a) Discuss in detail the post activities of Environmental Audit.
b) How far the Environmental Protection Act 1986 is effective in controlling Environmental pollution in India -Discuss.

8. a) List out the objectives of Environmental Auditing. Briefly describe the pre-auditing activities.
b) Discuss the impacts due to Noise Pollution.

CODE No.:10BT70111

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

GROUND IMPROVEMENT TECHNIQUES

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the use of earth moving equipments in shallow compaction with sketches.
b) Explain about thermal, chemical and electrical strengthening methods with drawings.

2. a) What is the principle of soil compaction and highlight the benefits of soil compaction in terms of geotechnical properties?
b) Explain the steps involved in vibro-compaction and vibro-replacement methods. Indicate their applicability to various soil types.

3. a) What are the benefits of preloading a saturated clay deposit?
b) What are the methods available to providing vertical drainage of a saturated clay deposit?

4. a) What is grouting and its functions?
b) Describe the principle and application of soil-bituminous stabilization.

5. a) Provide a schematic of a ground anchor and show its various components.
b) Briefly explain how a soil nail stabilizes an unstable slope.

6. a) Explain the components of reinforced earth. Write the design approach of reinforced earth wall with neat sketch.
b) Design the reinforcement for internal stability of a 6 m high reinforced earth wall. The metallic reinforcing strips are 120 mm wide having tensile strength of 18 kN. The horizontal spacing of strips are fixed as 1m. Find the vertical spacing and effective length of strips. Draw the final diagram. Given the back fill soil has 17 kN/m^3 unit weight=0, Friction angle=30^0, the friction angle between soil and reinforcement is 20^0.

7. a) Provide one application each of geomembrane and geogrid types of reinforcements.
b) Identify and briefly explain two mechanical tests performed on geosynthetic material.

8. a) What are the foundation problems commonly encountered on expansive soils?
b) Define free swell index. What are the foundation techniques that are adopted on sites with expansive soils?

CODE No.:10BT70201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

SWITCHGEAR AND PROTECTION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the diagram showing the short-circuit current as a function of time for a synchronous generator and explain the following terms:
i) Synchronous reactance ii) Transient reactance iii) Sub-transient reactance.
b) The line currents in a 3-phase supply to an unbalanced load are I_a = - 10+ j 20 , I_b = 12 - j10 and I_c = - 3 - j5 ampears r.s.p. The phase sequence is *abc*. Determine the sequence components of currents.

2. Describe the construction, principle of operation and applications of Vacuum circuit breaker with neat sketch.

3. a) What are the advantages of induction cup relays over induction disc relays? What is the purpose of shading in an induction disc relay?
b) What is the difference between fuse and relay?

4. a) Classify the various types of over current relays and give their applications along with approximate characteristics.
b) Show mathematically how the distance relays should be connected so that they provide equally sensitive protection against three-phase and phase -to-phase faults and show the diagram of connections also.

5. a) Describe the construction and working of Buchholz relay with neat sketch.
b) A 120 MVA, Δ-Y connected, 11/220 kV transformer is to be protected by percentage differential scheme. CT's used are of 5000/5 and 400/1 respectively. Draw the sketch of complete scheme.

6. a) What is differential protection of bus bar?
b) Write short note on fault bus protection.

7. a) Explain, what is the necessity of neutral earthing and give the advantages of neutral grounding of an electrical system.
b) Explain briefly the following:
i) Peterson coil
ii) Earthed transformer
iii) Neutral earthing arrangement in power stations.

8. a) State the various causes of over voltages in a power system.
b) Explain the tests conducted on surge arresters.

CODE No.:10BT70202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

POWER SYSTEM OPERATION AND CONTROL

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is an incremental fuel cost? How is it used in thermal plant operation?
b) Name the components of production cost and explain.

2. Give algorithm for economic allocation of generation among generators of a thermal system taking into account transmission losses. Give steps for implementing this algorithm and also derive necessary equations.

3. Explain about Hydro thermal co-ordination with necessary equations.

4. a) Explain the mathematical modeling of speed governing system with block diagram approach.
b) Discuss briefly about small signal transfer function.

5. Explain the dynamic response of load frequency control of an isolated power system with a neat block diagram. Draw the plots of change in frequency with respect to time with and without making approximations in the analysis.

6. a) Explain how the tie-line power deviation can be incorporated in two-area system block diagram.
b) What are the features of the dynamic response of a two-area system for step load disturbances?

7. a) Explain different methods of voltage control with neat block diagrams.
b) Compare the different types of compensating equipment for transmission systems.

8. What are the various entities of deregulated power system and explain in detail about their functional operations.

CODE No.:10BT70203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

POWER SYSTEM ANALYSIS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the Algorithm for the formulation of Y-Bus- Matrix.

2. a) Form the Bus Impedance matrix Z-Bus for the following Figure.1

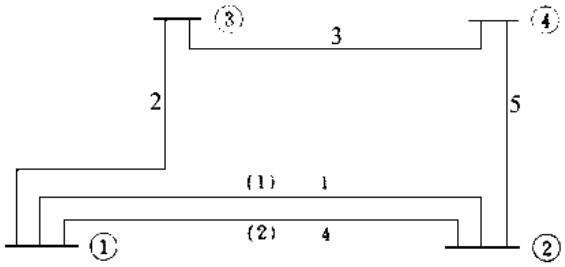


Figure 1.

Self		Mutual	
Bus code	Impedance	Bus code	Impedance
1-2(1)	0.6		
1-2(2)	0.4	1-2(1)	0.2
1-3	0.5	1-2(1)	0.1
3-4	0.5		
2-4	0.2		

Table 1: Impedance for network

b) Modify the bus admittance matrix in (a) to include the addition of an element from bus 2 to bus 4 with an impedance of 0.3 and coupled to element 5 with a mutual impedance of 0.1.

3. Figure.2 show the one-line diagram of a simple three-bus power system with generation at bus 1. The voltage at bus 1 is $V_1 = 1.0\angle 0^0\ pu$. The scheduled loads on buses 2 and 3 are marked on the diagram. Line impedances are marked in per unit on a 100 MVA base. Neglect line resistances and line charging susceptances are neglected. For two iterations, determine V_2 and V_3 with initial estimates of $V_2^{(0)} = 1.0 + j0.0\ pu$ *and* $V_3^{(0)} = 1.0 + j0$, using Gauss-Seidel method.

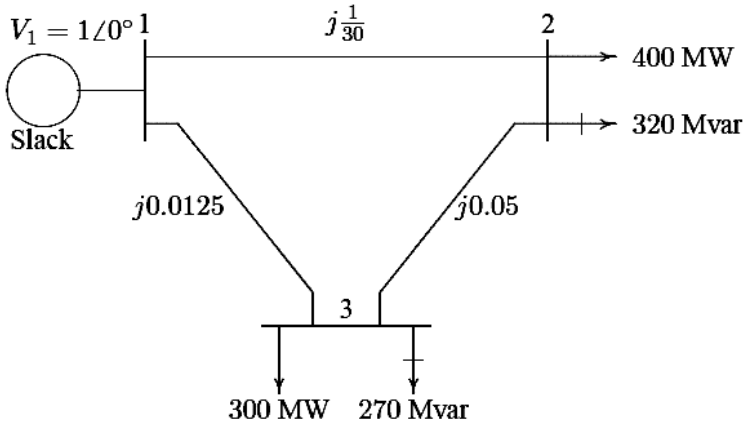


Figure.2

4. Figure.3 shows the one-line diagram of a simple three-bus power system with generation at buses 1 and 2. The voltage at bus 1 is $V^{(0)} = 1.0\,pu.$ Voltage magnitude at bus 2 is fixed at 1.05 pu with a real power generation of 400 MW. A load consisting of 500 MW and 400 Mvar is taken from bus 3. Line admittances are marked in per unit on a 100 MVA base. Neglect line resistances and line charging susceptances. Using Newton-Raphson method, start with the initial estimates of $V_2^{(0)} = 1.05 + j0\,and\ V_3^{(0)} = 1.0 + j0$ and keeping $|V_2| = 1.05\,pu.$, Perform two iterations to determine the phasor values of $\mathbf{V_2}$ and $\mathbf{V_3}$

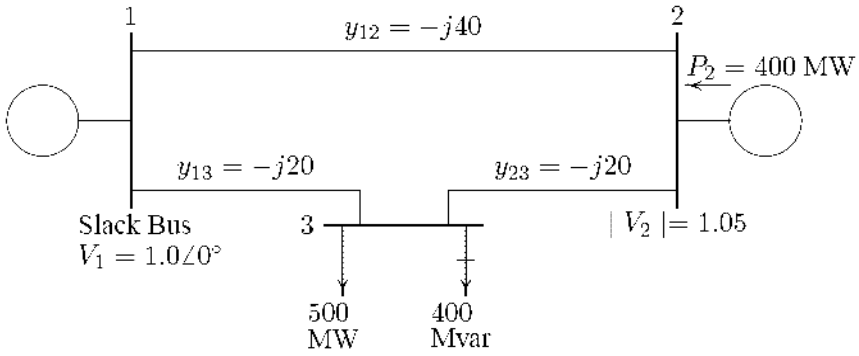


Figure.3

5. a) Write the performance equation of a three-phase network element in impedance form.
b) Obtain $\mathbf{Z_{pq}}^{0,1,2}$ for a stationary element, using symmetrical components.

6. Define the power angle equation, P = **EgEm/X**, and with usual notations. What are the assumptions commonly made in stability studies?

7. The one-line diagram of a simple 3-bus power system is shown in Figure.4 3-phase fault occurs at Bus-2 through a fault impedance of Zf = j0.2 p.u.
a) Using Thevenin's theorem, obtain the impedance to the point of fault and the fault current in p.u.
b) Determine the bus voltages and line currents during fault.

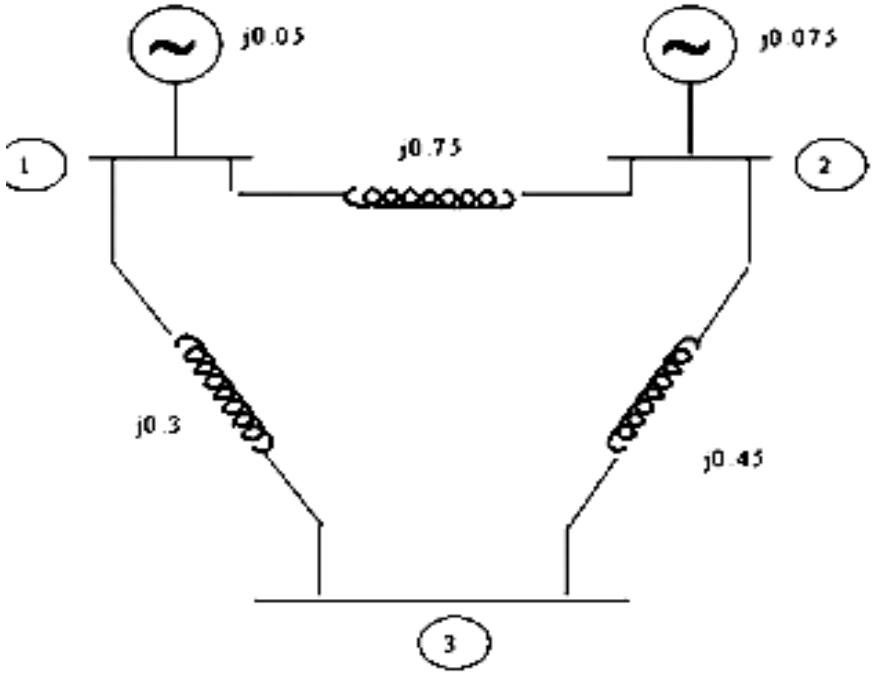


Figure.4

8. Consider a Single machine connected to Infinite bus through Double circuited line. Derive the expression for critical clearing time and critical clearing angle when there is sudden short circuit on one of parallel lines.

CODE No.:10BT70204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

FLEXIBLE AC TRANSMISSION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the concept of power facts in A C Transmission System.
b) What are the factors limits the loading capability?

2. a) Briefly explain description of facts controllers.
b) What are the basic types of facts controllers?

3. a) Explain the operation of single-phase full-wave voltage source converter.
b) Contrast and compare current source converter with voltage source converter.

4. Write a short notes on the following:
a) Improvement of transient stability using static shunt compensation.
b) Power oscillation damping using static shunt compensation.

5. Explain briefly about hybrid VAR generators.

6. Discuss the steady state V-I characteristics of SVC and STATCOM and their dynamic performance.

7. a) What are the objectives of series Compensation and explain in brief?
b) Write note on approaches to controllable series Compensation.

8. Draw the characteristics of Thyristor Controlled series capacitor and explain the operation of TCSC with relevant wave forms.

CODE No.:10BT70401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail about limiting error with a suitable example.
b) Differentiate between series type ohmmeter and shunt type ohmmeter.

2. a) Explain the working of a Fixed AF oscillator.
b) Draw and explain the block diagram of Arbitrary waveform generator.

3. a) With the help of a block diagram explain an AF wave analyzer.
b) State the applications of wave analyzer.

4. a) With a neat diagram explain electro static focusing in CRO.
b) Explain Dual and Trace CRO.

5. a) With a neat block diagram explain the operation of Sampling oscilloscope.
b) With a neat block diagram explain dual beam oscilloscope.

6. a) List the Errors and precautions in using bridges.
b) Explain the features of Wein bridge and list its applications.

7. a) How do you classify strain gauges and explain in detail.
b) Describe the construction of an LVDT with the help of a diagram.

8. a) Explain briefly the instruments that are used in computer controlled instrumentation.
b) Explain the procedure for testing Radio Receiver by using computer controller.

CODE No.:10BT70402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

DIGITAL IMAGE PROCESSING (ELECTIVE-IV)

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss with suitable diagrams the meaning of Sampling and Quantization.
b) Explain the various data Acquisition systems in Digital Image Processing.

2. a) Explain the properties of discrete Fourier transforms of 2-D signal.
b) What is energy compaction property? Derive the Kernel coefficients for N=8 of DCT.

3. a) Explain about image histogram. Why is histogram equalization required? Justify your answer with a suitable example.
b) What is meant by Enhancement by Point processing? Explain.

4. a) Explain about Spatial Filtering in Frequency Domain.
b) Discuss the concept of Homomorphic filtering.

5. a) Explain how to denoise the image corrupted with salt and pepper noise using Median filter.
b) Discuss about the additive and Multiplicative noise models.

6. a) Explain how the gradient is used for edge detection.
b) What is meant by thresholding? Discuss about basic adaptive thresholding.

7. a) Explain dictionary based compression technique.
b) Write notes on Image Compression Standards.

8. a) Draw the general shape of the transformation functions used to correct excessive contrast in the RGB color space.
b) Explain in detail about the CMYK and NTSC color spaces.

CODE No.:10BT70405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

EMBEDDED AND REALTIME SYSTEMS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Give some examples for Small scale Embedded Systems, Medium scale Embedded Systems and Sophisticated Embedded Systems.
b) When is application specific system processors (ASSPs) used in an Embedded System? Discuss.

2. Explain the processors in an Embedded System.

3. a) Explain in detail about dead clock.
b) Which is derivative of concurrent model and explain the same?

4. a) Where is IEEE 1394 interface used? Explain the protocol architecture of IEEE 1394.
b) What is IrDA interface? What are its advantages and limitations?

5. Explain state transition diagram of RTOS also explain what a scheduler is and how it manages different tasks?

6. a) Explain briefly about mailbox related functions.
b) Give the steps to destroy a message queue.

7. Explain the instruction sets and condition codes of ARM processor with an example for each.

8. Explain in detail about SHARC Microcontroller also compare the same with Microcontroller.

CODE No.:10BT70408

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

RADAR SYSTEMS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the losses in radar system and how do you compensate them?
b) Derive the radar range equation.

2. a) Derive the Radar range equation which is influenced by integration of Radar pulses.
b) Find the maximum range of a radar whose transmitted power is 150 KW, cross sectional area of the target is 20 sq.m. The minimum power received is 1mw. The power gain of the antenna used is 950 and the operating frequency is 2GHz.

3. a) Define Doppler Effect. Does Doppler effect occurs in stationary target? Explain.
b) Explain about measurement of Doppler direction using synchronous two phase motor.

4. a) Draw the block diagram of an MTI radar which uses power amplifier and explain it operation.
b) Differentiate blind speeds and blind phases. Also distinguish between MTI radar and MTI with single delay line canceller.

5. a) Draw and explain the wave front phase relationships in phase comparison monopulse radar.
b) Write a brief note on acquisition and scanning patterns.

6. a) What is meant by a whitening filter?
b) Explain the principle and characteristics of a matched filter. Derive the expression for its frequency response function.

7. a) Explain about the beam steering and variations in beam width with variations in steering angle of an antenna array system.
b) Explain the principle of balanced duplexer.

8. a) What is SAR (Synthetic Aperture Radar)? What are its applications?
b) Explain about Inverse SAR and Electronic Counter.

CODE No.:10BT70421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

ADVANCED MICROPROCESSOR AND MICRO CONTROLLERS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Draw the block diagram of 80286 microprocessor and explain the functions of each block.

2. a) Explain the Memory Management in 80386 and 80486.
b) Explain i) Segment and System Descriptors ii) Descriptor Tables

3. a) Describe the organization and interface of the 64-bit wide Pentium memory system and its variations.
b) Write the improvements in PentiumPro when compared with the Pentium.

4. Explain the pin description of Pentium IV microprocessor with a neat pin diagram.

5. a) Explain the Memory organization of 8051 microcontroller.
b) Explain different modes of operation of Timers in 8051.

6. a) Explain different addressing modes of 8051 microcontroller.
b) Explain external memory data transfer Instructions with examples.

7. a) Explain Interrupt latency and Interrupt dead line.
b) Explain usage of input and output capture registers with free running counters for real time control.

8. a) Explain Programmable Timers in 80196.
b) Explain about Barrel Shifter and its operation for data processing instructions.

CODE No.:10BT70501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

PRINCIPLES OF COMPILER DESIGN

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is a regular expression? How is it used in lexical specification?
b) Discuss the role of various phases of a compiler in translation of source program to object program and illustrate with an example.

2. a) What is left recursion? Give an example.
b) Construct the predictive parsing table for the grammar
S →(L)/a
L →L,S
Is the above grammar LL(1) ?

3. Show that the following grammar is LR(1) but not LALR(1)
S →Aa/bAc/BC/Bba
A →d
B →d

4. Let synthesized attribute Val give the value of the binary number generated by S in the following grammar. For eg., on input 101**.**101, S**.**Val = 5**.**625.
S → L • L | L
L → LB | B
B → 0 |1
Write Syntax-Directed Definition synthesized attribute values corresponding to each of the productions to determine the S**.**Val.

5. a) What is a type expression? Write the tree structure for the type expression int[2][3]
b) Write briefly about the name equivalence of type expressions.

6. a) What is a runtime Stack? Explain the contents of a runtime stack when "Factorial' function is executed with input value of 5.
b) Explain any three programming language features which require heap storage allocation and for these features, explain the storage management.

7. a) Explain the construction of flow graph for a given set of three address statements.
b) Write the algorithm to compute the values of IN and OUT using global data flow equations.

8. Describe various Register allocation optimization techniques with an example.

CODE No.:10BT70502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

SOFTWARE TESTING TECHNIQUES (ELECTIVE-III)

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about Errors, Bugs and Failures.
b) Explain the Levels of Software Testing.

2. Define path sensitization. Explain the heuristic procedure for Sensitizing paths with the help of an Example.

3. a) Implementation of a transaction flow is usually implicit in the design of the system control structure and database. Explain.
b) Discuss about sensitization & instrumentation based on transaction flows.

4. a) What is the purpose of Domain testing? Explain.
b) State and explain Testability of Domain.

5. Explain in detail the reduction procedure for converting a flow graph into a path expression with examples.

6. a) How to design the testcases using decision tables?
b) Explain the KV charts for a single variable.

7. Discuss the following on the state charts.
a) Good state graphs and bad b) State bugs c) State tables

8. Explain about testing a web application in detail with examples.

CODE No.:10BT70506

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

EMBEDDED SYSTEMS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the characteristics of embedded computing applications.

2. a) Give the complete structure of internal RAM in 8051.
b) Write short notes on external memory interfacing signals of 8051.

3. Write details of the following instructions
a) ADDC b) XCH c) MUL d) PUSH e) CPL

4. a) Explain about the usage subroutines in 8051 with a suitable example.
b) Explain about **acall** and **lcall** instructions with an example.

5. Explain the interfacing of keyboard with 8051 microcontroller.

6. a) What is a task? Explain different task states.
b) Explain how the Data is shared between different tasks.

7. a) What is the importance of semaphores and queues?
b) Explain different scheduling schemes in detail.

8. a) Explain CAN bus protocol in detail.
b) Differentiate CAN and I2C bus protocols.

CODE No.:10BT71001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

ANALYTICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about Hydrogen Purity meter by using Thermal Conductivity method.
b) With a neat sketch explain the silica analyzer.

2. a) What is the principle of H_2S analyzer? Explain its working.
b) Explain about different types of thermal conductivity gas analysers.

3. a) Discuss the types of applications in which gas Chromatography is particularly useful.
b) Name the different mobile phase delivery system in Chromatographs and explain any one.

4. a) Explain any one of electrochemical methods for Oxygen analysis.
b) Name Oxygen analyzer used for medical applications and explain it.

5. a) Give the sketch of a FTIR spectrophotometer and explain its working.
b) What are the different sources for Flame photometers? Explain.

6. a) Explain in detail the construction of a premix burner with diagram.
b) Explain the operation of multi channel type instrument to calculate focal length of a monochrometer.

7. a) Discuss different types of mass spectrometers.
b) Explain the role of X-ray diffract meters.

8. a) Discuss the variation of count rate with voltage using suitable counter.
b) What is the dead time of the counter? Explain.

CODE No.:10BT71005

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

MEMS AND MICROSYSTEMS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the most obvious distinctions between Microsystems and Microelectronics technologies?
b) Define MEMS. Enumerate the applications of microsystems in automotive industry.

2. a) Why are electrostatic forces used to run micromotors rather than conventional electromagnetic forces? Explain why this actuation technique is not used in macrodevices and machines.
b) What are the advantages and disadvantages of piezoresistors and capacitors as signal transducer.

3. A force balanced micro accelerometer is assumed to be modelled on a beam spring system, which is designed using silicon, whose Young's modulus is 190000MPa. An idealized situation is that the entire proof mass 3×10^{-6} kg is concentrated at the centroid of the moving beam. If the distance between the anchors is 600μm and distance between mass springs is 700μm and area moment of inertia of the beam is $10.4\times10^{-24}m^4$, determine the natural frequency, equivalent spring constant and thickness of the beam spring (for a maximum allowable deflection of 5mm).

4. a) Write a note on Computational fluid dynamics.
b) Using an example, explain the scaling in rigid body dynamics.

5. a) Draw a unit cell of a cubic crystal and note the following planes: (001), (110), (111).
b) Discuss various techniques used in making the polymers conduct.
c) What are the applications of polymers in MEMS and microsystems?

6. a) Explain various diffusion techniques used in MEMS industry.
b) Compare between the following processes
i) CVD ii) PVD iii) Epitaxy.

7. a) Write a note on various etch stop mechanisms used in bulk micro machining.
b) What are various design considerations that are involved in using the
i) silicon ii) GaAs iii) quartz and iv) polymer as substrate materials?

8. Write short note on the following:
a) Major reliability issues involved in MEMS packaging.
b) Various levels of microsystem packaging.

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

WEB PROGRAMMING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain how a basic table is created using HTML.
b) What is CSS? Explain with an example to clearly illustrate the creation of CSS rule for a given text.

2. a) How is programming made easier in Java script? Also mention the benefits and problems with Java script.
b) Explain the mathematical functions in Java script?

3. a) Write an XSL stylesheet to transform your diary into an HTML page.
b) Explain DOM and SOX parsers.

4. Discuss the use of Cookie. Develop and explain a servlet that illustrate the use of Cookies.

5. a) Explain the process of connection management using JDBC.
b) Discuss the process of mapping sql types to java.

6. a) What are the advantages and disadvantages of JSP over Servlets? Elucidate.
b) Write a JSP page to print “hello” and explain various tags used.

7. Explain about MVC Architecture.

8. What is Custom Tag library and how is it defined? Give an example.

CODE No.:10BT71203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

MULTIMEDIA AND APPLICATIONS DEVELOPMENT

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the various types of images.
b) Discuss the various popular file formats.

2. Discuss the effect of sampling and quantization and Signal to Quantization Noise Ratio on quality of signals.

3. a) Explain the use of constructor function.
b) What is static type? Explain.

4. a) Explain about Package in detail. Give Example.
b) Explain about Exceptions.

5. Explain the use of Movie Clip Sub class.

6. Explain the following Lossless compression techniques:
a) Dictionary Based Coding
b) Arithmetic Coding

7. a) Explain about MPEG Video Compression Technique.
b) Explain about G**.**726 ADPCM Audio Compression Technique.

8. Explain about Multimedia over IP.

CODE No.:10BT71204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

CRYPTOGRAPHY AND NETWORK SECURITY

[Information Technology, Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Why are confidentiality, authentication and integrity important principles of security? Explain.
b) Give a brief note on the Internet Organizations and RFC Standards.

2. a) Show that, Fiestel Decryption is the inverse of Fiestel Encryption.
b) "To achieve greater security, both link and end-to-end encryption is needed." Justify.

3. a) Differentiate between conventional and public key encryption techniques.
b) Explain about steps involved in exchange of public key certificates.

4. a) Why compression is performed after generating signatures and before message encryption in PGP?
b) Make a table to compare and contrast cryptographic algorithms used in PGP and S/MIME.

5. a) Explain in detail IP Security Architecture.
b) Mention the differences between transport mode and tunnel mode encryption.

6. a) What services SSL record protocol provides for SSL connections? How are they provided? Explain.
b) Describe the differences between SSL and TLS.

7. a) Explain the nature of viruses and the countermeasures to be taken to overcome them.
b) What are the strategies for password selection?

8. a) Mention the characteristics of a good firewall.
b) What is the common criteria for IT Security evolution?

CODE No.:10BT71208

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

SOFTWARE PROJECT MANAGEMENT

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Describe the methods used in managing the development of large scale software systems.

2. What are the principles of Modern Software Management?

3. a) Explain transition in the phases of the life cycle process.
b) List out the low level requirements that evolve for a relatively large project.

4. a) Discuss how architecture affects modern software development.
b) Explain architectural framework.

5. a) Why periodic assessments are crucial for focusing continuous attention on the evolving health of the project and its dynamic priorities? Explain.
b) What is an evolutionary work breakdown structure? Explain.

6. Explain about Line-of-Business Organizations.

7. a) What is the need for metrics? What do you mean by indicators?
b) List the seven core metrics, their purpose and perspectives.

8. What were the core metrics collected by CCPDS-R? What is the purpose of each metric? How were they analyzed?

CODE No.:10BT71301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

NEURAL NETWORKS AND FUZZY SYSTEMS

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Compare biological and artificial neural networks.
b) Explain in detail the different artificial neural network architectures.

2. a) Explain why single layer Perceptron Network could not solve even Ex-OR problem.
b) Explain the architecture of Kohenen's self organizing map network.

3. a) Explain the conditions of stability for continuous Hopfield network.
b) Describe application of Hopfield network in pattern recognition.

4. a) Using suitable diagrams and equations, explain the basic Bidirectional Associative Memory.
b) With suitable diagrams explain the Adaptive Resonant Theory.

5. a) Why fuzzy set theory is effective to tackle the problem of uncertainty? Justify.
b) State and explain the properties of crisp sets. With a neat sketch of Venn diagrams, discuss about the operation of crisp sets.

6. a) Explain the three types of defuzzification methods with its formulae.
b) Let $\tilde{A}_1, \tilde{A}_2$ are two fuzzy sets as shown in Fig 1 and Fig 2.

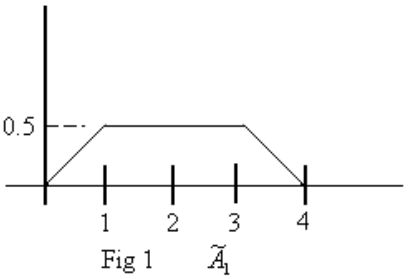


Fig 1 $\tilde{A}_1$

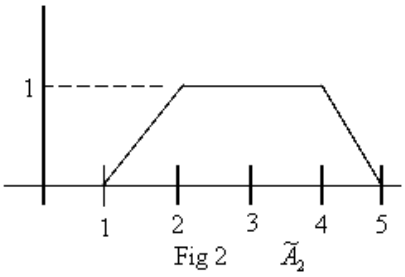


Fig 2 $\tilde{A}_2$

Find the defuzzified value using centroid method.

7. a) What is the general format of fuzzy rule base system?
b) Given
i) Every soldier is strong-willed
ii) All who are strong willed & sincere will succeed in their career
iii) Indira is soldier
iv) Indira is sincere.
Prove: Will Indira succeed in her career.

8. Explain in detail about the application fuzzy logic controller in cruise control.

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CODE No.:10BT71501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

NETWORK PROGRAMMING

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about UDP.
b) Explain the protocol usage by common internet application.

2. a) Write about 'value result arguments'.
b) Explain the following functions
i) Connect ii) Listen iii) Fork iv) Close

3. a) Explain the procedure for rebooting the server host.
b) Explain normal startup TCP client and server.

4. a) Explain 'getsockopt' and 'setsockopt' function.
b) Explain IPV6 socket options.

5. a) Explain the purpose and usage of UDP sockets and their different functions.
b) Explain the way in which a TCP client server different from UDP client server.

6. a) Briefly discuss about DNS with an example.
b) Explain the following functions:
i) gethostbyname ii) uname

7. a) Explain IPC Perm structure.
b) List and explain shared memory functions.

8. Write a short note on the following:
a) rlogin
b) RPC

CODE No.:10BT71503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

ARTIFICIAL INTELLIGENCE

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write a short report on various applications in the field of AI.
b) What is AI and explain various views AI in detail.

2. a) What is meant by search strategy? What are the types of search strategies? Explain them in detail.
b) Explain in detail about the CSP.

3. a) Define the terms logic and knowledge base. Explain with example.
b) Explain propositional logic in detail with example.

4. a) Explain the unification algorithm.
b) Explain inference process in first order logic, using suitable example.

5. Explain about the internet shopping world.

6. a) Explain uncertainty and rational decisions.
b) Explain about the axioms of probability.

7. Explain the different forms of learning in detail.

8. a) Define neuron and explain the neural network architecture in detail.
b) Explain crisp sets with suitable examples.

CODE No.:10BT80504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2014

CLOUD COMPUTING (ELECTIVE -IV)

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain major cloud service models.

2. a) Explain distributed computing.
b) Explain Bully algorithm.

3. Explain the functionality of Hypervisor. Describe how the instruction set conversion happens in the Virtualization processes.

4. Explain the following with respect to Cloud computing:
a) Software Virtualization b) Para Virtualization

5. a) Discuss about data security in cloud computing.
b) How is security provided to virtual machines placed over the single data centre?

6. What are the objectives and benefits of virtualization technology?

7. Enumerate different types of computing in virtualization process.

8. Discuss Google App Engine as Platform as a Service in Cloud.

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

MANAGEMENT SCIENCE

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and describe the Fayol's principles of management.
b) Discuss the social responsibility of management.

2. a) Sketch and explain the line and staff organization structure stating the advantages and limitations.
b) State the essential elements of good organization.

3. a) Explain the basic steps of Method study.
b) What are the different methods of forecasting? Explain any two of them.

4. a) What is ABC analysis? Explain with an example.
b) What are the types of inventory? Explain their importance.

5. a) Enumerate the assumptions of McGregor's theory of 'X' and 'Y'.
b) What is job evaluation? Explain the methods of job evaluation.

6. The activity details along with time estimates in days and precedence relationships are given below:

Activity	Predecessor	Time estimate		
		Optimistic	Most likely	Pessimistic
A	--	1	2	3
B	A	1	2	3
C	A	2	4	6
D	A	2	5	14
E	C,D	6	12	18
F	D	1	3	5
G	E	10	12	30
H	G	3	5	7
I	H	1	2	3
J	B and I	5	10	15

i) Construct the network.
ii) Find the Critical path and project duration.
iii) Probability of completing the project within the expected time.

7. a) Discuss the opportunities in India for Women Entrepreneurs.
b) Explain the role of Entrepreneurship in Economic development.

8. a) Explain the basic concepts of Just-In-Time (JIT) concepts.
b) Illustrate with examples the significance of TQM in organizational growth.

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CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

OBJECT ORIENTED PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the OOP concepts in detail.
b) What are constructors and destructors?

2. a) What is the need to make a function as virtual? List any four rules to make a function as virtual.
b) Write a C++ program to create a class called STRING and implement the following operations:
i) Include constructor that uninitializes the STRING **s**1, string with length zero
ii) Include constructor that initializes the STRING **s**2="ISE"
iii) Using copy constructor achieve **s**1=**s**2
Display the results after every operation.

3. a) Write a recursive program in JAVA to find the factorial of numbers.
b) Discuss how type conversion and casting is supported in JAVA.

4. a) Explain use of super with an example.
b) What is method overriding? Briefly explain abstract classes.

5. a) What is CLASSPATH? How can you import a package?
b) Briefly explain the concepts and benefits of exception handling?

6. a) How to control the interaction between two threads? Explain with a suitable JAVA code.
b) How do you pass parameters to applets? Give an example.

7. a) Explain delegate event models in detail.
b) What are the different layout managers in JAVA?

8. a) Briefly discuss the limitations of AWT.
b) Write a program to create JTextField and adding it to the content pane, When the user presses ENTER, an action event should be generated and this should be handled by displaying the text in the status window.

CODE No.:10BT60405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

VLSI DESIGN

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the fabrication process steps for P-well CMOS technology in detail.
b) What is Lithography? List the various types of Lithography techniques and explain any one in detail.

2. a) Draw the circuit diagram and transfer characteristics of a CMOS inverter and explain various regions of operation.
b) Explain the shift in transfer characteristic of CMOS inverter with change in β ratio.

3. a) What is a stick diagram? Give encodings for a double metal CMOS process.
b) Discuss about the effects of scaling.

4. a) An off chip capacitance load of 5pF is to be driven from CMOS inverter. Set out suitable arrangement giving appropriate channel L**:**W ratios and dimensions. Calculate the number of inverter stages required, and the delay exhibited by the overall arrangement driving the 5pF load.
b) Realize 4**x**1 MUX in switch logic.

5. a) Distinguish between asynchronous and synchronous counters. Draw the circuit of a synchronous up-down counter and explain its operation.
b) With the help of circuit diagram and waveforms, explain the 'read' operation of RAM.

6. a) Describe the functionality of PLA with respect to Architecture, Pre-charged gates and delay.
b) Illustrate the semi custom design flow.

7. a) Explain the terms: i) Placement and ii) Routing.
b) Describe with neat sketches various design-capture tools.

8. a) Explain the D-algorithm test method with the help of suitable example and obtain various test vectors.
b) Explain the various faults that occur at the chip level.

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CODE No.:10BT60503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

DATA WAREHOUSING AND DATA MINING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is the need for data cube? How it can support for multi dimensional data?
b) Briefly compare the following concepts.
i) Enterprise warehouse ii) Data mart iii) Virtual warehouse

2. a) Describe the different kinds of data.
b) Explain the following data mining functionalities with suitable examples.
i) Class/Concept description ii) Classification and prediction

3. a) Discuss in detail with examples whenever necessary, architecture point of view of data warehouse.
b) Compare and contrast OLAP systems and statistical databases.

4. a) What is "closed frequent itemset"? What are the advantages of closed frequent itemsets?
b) Explain any three techniques for improving the efficiency of apriori algorithm.

5. a) Define Classification Problem and list various models used for classification.
b) Explain at least three measures for selecting right attribute for splitting in a decision tree.

6. a) Explain similarity measures for various kinds of data in clustering.
b) Explain any one Density-based Clustering method and explain its merits over other kinds of clustering methods.

7. Discuss data stream management systems and stream queries.

8. a) How can class-based generalization be performed for a large set of objects?
b) Explain about text data analysis and information retrieval.

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

COMPUTER NETWORKS

[Electronics and Communication Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the different hardware devices that are part of the network? Give the characteristics of them.
b) With the help of a diagram, explain the layered approach for a computer network.

2. a) How do you calculate the maximum data rate of a channel with noise and without noise? Illustrate with an example.
b) Which part of the electromagnetic spectrum is used for transmission? Explain how properties vary with the frequency.

3. Discuss the algorithms used in the Stop and Wait ARQ protocol. Explain the reason for moving from the Stop and Wait ARQ protocol to the Go Back -N ARQ protocol.

4. a) Explain the problem with the basic bit-map protocol .
b) Narrate the working principle of 802.11 MAC sub layer protocol.

5. a) Give a detailed description of distance vector routing. What are its limitations and how they overcome?
b) Compare and contrast IPv4 and IPv6 header fields. Do they have any fields in common?

6. a) What are the applications which prefer TCP and UDP? Justify your answer.
b) With the help of a diagram, explain the different fields of UDP header.

7. Elucidate the role of a Domain Name Space (DNS) on computer networks.

8. Explain the following
a) IMAP b) WWW architecture c) Cookies d) MIME

CODE No.:10BT70101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

REMOTE SENSING AND GIS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is Mosaic? Explain various methods used for generating Mosaic from vertical aerial photographs.
b) Define Parallax. Derive an expression for determining height of an object using parallax measured with a parallax bar.

2. a) Explain the various regions of electromagnetic spectrum. Delineate the regions which are of particular interest in remote sensing.
b) Differentiate active and passive remote sensing.

3. a) Define Resolution? Explain the different resolutions in detail.
b) What are the characteristics of EMR interaction with soil particles?

4. a) What is GIS? Give detailed notes on the components of GIS.
b) Explain the working principle of GPS.

5. a) What are the data input and output devices used in GIS?
b) Define Projection System in GIS. Discuss about polyconic and UTM projection system.

6. a) Explain the process of Address Geocoding in GIS.
b) Describe various Visual Analysis Methods in GIS.

7. Describe the utility of Remote Sensing and GIS in Rainfall-Runoff modelling of a typical rural watershed.

8. Discuss the role of remote sensing and GIS in the identification of sites for Artificial recharge structures.

CODE No.:10BT70102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

ENVIRONMENTAL ENGINEERING - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss briefly the necessity of replacing the conservancy system by the water carriage system.
b) State various types of water-carriage system and briefly describe their relative advantages and disadvantages.

2. a) What you mean by sewer appurtenance? Name the sewer appurtenances generally provided in a sewage network.
b) Design a circular sewer to carry a flow from a city with a population of 1lakh. Assume that the per capita water supply to the city is 150 lpcd. Assume the bed slope of the sewer as 0.0001.

3. a) The following observations were made in laboratory on 2% dilution of waste water sample at 20°C :
D.O of aerated dilution water = 7mg/L
D.O of original sample of waste water =0.5mg/L
D.O of diluted sample after 5 days of Incubation = 2mg/L
Calculate 5 day BOD of the sample and Ultimate first stage BOD.
Assume deoxygenating rate constant as 0.1 at the test temperature
b) Write short note on
i) BOD & COD ii) Population equivalent

4. a) What do you understand by Grit chamber? Explain the Configuration of a Grit chamber with help of a neat sketch.
b) Discuss in brief various design parameters used for settling tanks.

5. a) Design a high rate trickling filter to treat sewage flow of 10 MLD with recirculation of 1.5. The influent BOD is 250mg/l, out of which 30% BOD is removed in primary clarifier. Final effluent BOD desired: 30mg/l.
b) Answer briefly the following:
i) Factors affecting biological treatment system ii) Algal-Bacterial Symbiosis

6. a) What is sludge condition and dewatering? Explain any one of the methods of sludge dewatering.
b) What is the mechanism involved in the process of removal of pathogenic bacteria from sludge?

7. a) A treatment plant disposes 50 MLD of wastewater into a river. The flow rate in the river is 20 cum/sec and its DO content is 8 mg/l before the mixing point. If the BOD of waste water is 50 mg/l, find the BOD and DO levels at the mixing point.
b) Design a septic tank for a township with 100 houses. Assume 4 inhabitants in each house and per capita water supply as 150 lpcd.

8. a) Briefly explain solid waste collection types in India.
b) Explain briefly various techniques and methods used to recover the materials from municipal solid wastes.

CODE No.:10BT70103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

STEEL STRUCTURES - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Design the central section of a riveted plate girder to carry a uniform load of 85 kN/m including the self weight of the plate girder. In addition, the girder has to support two concentrated loads of 60 kN at one third span points. The effective span of the girder is 18 m.

2. A mild steel plate girder simply supported at two ends has an effective span of 20m. It carries a dead load of 50kN/m and uniformly distributed live load of 40kN/m on the span. Design the maximum section of the welded plate girder allowing for impact.

3. The trusses for a factory building are spaced at 4.0 m and the purlins are spaced at 1.8 m center to center. The pitch of the truss is 1/4 and the span of the truss is 16 m. The vertical load from roof sheets are equal to 200N/m^2, and the wind load on the roof truss is equal to 1.7 kN/m^2. Design an I section purlin.

4. Design the purlin and principal rafter for a tubular steel truss to suit the following data:

Span of the truss	=	18 m.
Type of truss	=	Fink truss
Roof cover	=	GI sheeting.
Spacing of roof trusses	=	4.5 m.

Wind pressure 1.5 kN/m^2. Sketch the details of the designed section.

5. Design a simply supported gantry girder to be used in an industrial building for the following data.

Crane Capacity	= 250kN
Weight of crab	= 76kN
Weight of crane girder	= 150kN
Minimum clearance between crane hook and gantry girder	= 1.20m
Distance between centers of girder	= 18m
Distance between centers of wheels	= 5.0m
Height of Rail Section	= 80mm
Weight of Rail section	= 300N/m

6. Design an overhead rectangular pressed steel tank for a capacity of 50000 liters. The tank is supported on 6 columns and the height of staging is 12 m. Pressed steel plates of size 1.25 x 1.25 m are available. Take basic wind pressure intensity of 1.5kN/m^2.

7. a) Discuss the salient design features of shear connectors in composite members.
b) Design a composite beam of effective span 8m to carry a concentrated load of 150kN. The thickness of the slab is 110mm.

8. a) What are the advantages and disadvantages of plastic design?
b) Determine the collapse load of a fixed beam with a concentrate load at mid span.

CODE No.:10BT70104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

TRAFFIC ENGINEERING AND MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is the significance and scope of Traffic Engineering? Explain.
b) What factors influence the friction offered by a road surface? Explain.

2. a) What are the objectives of traffic volume studies? Discuss. Also explain the method of manual traffic volume counts.
b) Speed study is conducted on a roadway and the average speed is found to be 58.4 kmph. The standard deviation is 6.2 kmph. If the speeds follow the normal distribution, find out:
i) the probability that the speed is more than 60 kmph;
ii) the probability that the speed lies between 40 kmph and 70 kmph; and
iii) the 15^{th} percentile speed

3. a) What are the traffic characteristics to be considered to assess the level of service of any urban roads? Explain them with their characteristic influence on traffic.
b) Discuss the different types of on street and off street parking facilities provided and state the design standards to be met with.

4. a) What are the types of grade separated interchanges? Describe them by giving neat sketches.
b) Design a 3 phase traffic signal for an intersection where a North-South road is joined by a road from East forming a T - intersection. The traffic flows in PCU/hr are as follows:

From	**North**		**South**		**East**	
To	South	East	North	East	South	North
PCU/hr	800	200	750	300	450	500

Each directional flow has a lane width of 3.5 m . Take amber time as 3 seconds and inter green period as 4 seconds. Give the phasing diagram and timing diagram.

5. a) Explain how the noise is generated by road traffic.
b) What is Air pollution? What are the effects of pollutants due to road traffic on the environment?

6. a) What are the different types of road signs and what are their specifications? Support your answer with neat sketches and give at least two examples for each type.
b) Discuss about various longitudinal road markings.

7. a) Explain the principles of road safety audit.
b) What are the various causes of road accidents?

8. Write short notes on the following:
a) Travel Demand Management
b) One Way Streets and their Advantages and Disadvantages
c) Tidal Flow Operations as part of TSM

CODE No.:10BT70108

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

ENIVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Differentiate EIA and EIS. List out the typical guidelines of Government of India for conducting EIA of Engineering projects.
b) Discuss briefly the role of EIA in the developmental projects.

2. a) What is meant by environmental setting? Briefly explain various factors of environmental setting related to the establishment of a thermal power plant.
b) Define EIS. Write a typical format of EIS.

3. Discuss the EIA Methodology for the Soil and Ground Water.

4. What are the trends in EIA practice and evaluation criteria?

5. How do you evaluate environmental audit data and prepare a report.

6. a) Discuss how far the various Environmental legislations are effective in controlling and protecting our Environment.
b) Write the method of writing the Environmental Audit Report.

7. What is meant by 'Review Criteria' of EIA? Explain the detailed procedure for reviewing EIS.

8. Give the guidelines and EIA Methodology for a Dam Construction Project.

CODE No.:10BT70111

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

GROUND IMPROVEMENT TECHNIQUES

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the objectives of engineering on an existing ground ?
b) Briefly explain mechanical, hydraulic, physico-chemical and strengthening methods of ground improvement.

2. a) What are the main aims of compacting the soil at a site?
b) What are various rollers available in the field for densification of soils? Indicate the applicability of each compactor to the soil type.

3. a) Distinguish between sand drains and wick drains techniques.
b) Discuss the thermal methods of densifying cohesive soils.

4. a) What are various types of admixtures commonly used to stabilize soils?
b) What are the benefits of cement stabilization?

5. a) Describe the *in-situ* ground reinforcement methods of soils.
b) Enumerate the ground anchors method.

6. What are the advantages of earth reinforcement and give the applications of reinforcing earth material?

7. a) Provide one application each of geomembrane and geogrid types of reinforcements.
b) Identify and briefly explain two mechanical tests performed on geosynthetic material.

8. a) Discuss the foundation practices in expansive soils.
b) Describe the constant volume method of determining swelling pressure of expansive soil.

CODE No.:10BT70201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

SWITCHGEAR AND PROTECTION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the 'symmetrical components method' to analyse an unbalanced 3-ø system.
b) Derive an expression for fault current for line-to-line fault by symmetrical components method.

2. a) Explain with a neat sketch, the working of a Minimum oil circuit breaker.
b) Explain the following terms
i) restriking voltage ii) recovery voltage and iii) RRRV.

3. Discuss the principle of operation of an induction disc relay with relevant diagrams.

4. a) Enumerate different static relays and state the applications of static relays.
b) List out the different types of microprocessor based relays and explain any one of them with neat block diagram.

5. a) Discuss the faults in transformer and describe with sketch mertz-price scheme of transformer protection.
b) A 3Φ transformer rated for 33/6.6 kV is Y-Δ connected and the protection current transformers on the low voltage side have a ratio of 400/5A. Determine the ratios of CT's on the high voltage side.

6. Explain in various systems of time grading and current grading scheme of feeder protection.

7. What are the various methods of neutral grounding? Compare their performance with respect to
i) Protective relaying
ii) Fault levels
iii) Stability and
iv) Voltage levels of power systems.

8. a) State the various causes of over voltages in a power system.
b) Explain the tests conducted on surge arresters.

CODE No.:10BT70202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

POWER SYSTEM OPERATION AND CONTROL

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the input output characteristics of thermal power plants.
b) Explain different generation scheduling methods in steam plants. Explain their merits and demerits.

2. a) Assuming any relevant data and notation, derive the transmission loss formula.
b) Discuss about the optimum allocation of generators without line losses.

3. Describe different methods for solving hydro thermal scheduling.

4. a) Explain the mathematical modeling of speed governing system with block diagram approach.
b) Discuss briefly about small signal transfer function.

5. a) Briefly explain the control area concept and control area error.
b) A power system has load of 1250 MW at 50 Hz. If 50 MW load is tripped, find the steady state frequency deviation when
i) there is no speed control
ii) the system has a reserve of 200 MW spread over 500 MW of generation capacity with 5 % regulation on this capacity. All the generators are operating with valves wide open. Due to dead band, only 80 % of governors respond to load change. Assume load damping constant B=1.5.

6. Two areas are connected via an inter tie line. The load at 50 Hz, is 15000 MW in area 1 and 35000 in area 2. Area 1 is importing 1500 MW from area 2. The load damping constant in each area is B=1.0 and the regulation R=6 % for all units. Area 1 has a spinning reserve of 800 MW spread over 4000 MW of generation capacity and area 2 has a spinning reserve of 1000 MW spread over 10000 MW generation. Determine the steady state frequency, generation and load of each area and tie-line power for:
a) Loss of 1000 MW in area 2, with no supplementary control.
b) Loss of 1000 MW in area 2, with supplementary controls provided on generators with reserve.

7. A 3Φ feeder having a resistance of 3Ω and reactance of 10Ω supplies a load of 2 MW at 0.85 p.f. lagging. The receiving end voltage is maintained at 11 kV by means of static condenser drawing 2.1 MVAR from the line. Calculate the sending end voltage and power factor. What is the regulation and efficiency of the feeder?

8. a) Define Deregulation of Power systems and explain the need for deregulation in Power systems.
b) What is the role of modern technology in deregulated power market?

CODE No.:10BT70203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

POWER SYSTEM ANALYSIS

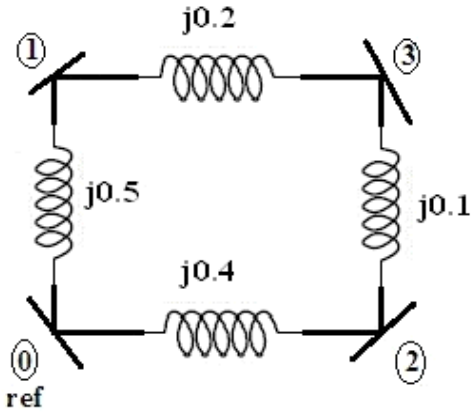
[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following terms: Subgraph, Connected graph, Basic Cut-Set and Basic Tie-Set.
b) Derive the equation for bus admittance matrix Y_{BUS} using singular transformations.

2. a) Derive the equations for Z_{qi} and Z_{qq} in Z_{BUS} building algorithm when the added element is a branch.
b) The single line diagram of a power system is shown below. Obtain Z_{BUS} using Z_{BUS} building algorithm.

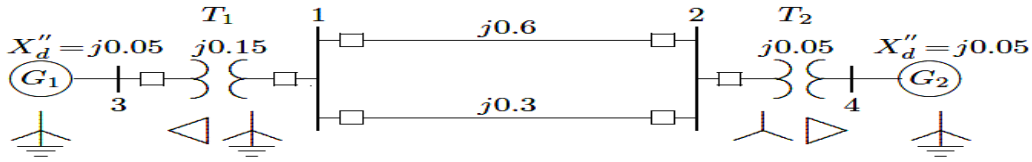


3. a) What is the significance of Slack bus in the power system load flow analysis?
b) Write the flow Chart to find the load flow solution using Gauss-Seidel method.

4. A synchronous generator represented by a voltage source of 1.05 PU in series with a transient reactance of j0.15 PU and inertia constant H = 4.0 sec. is connected to an infinite inertia system through a transmission line. The line has a series reactance of j0.30PU, while the infinite inertia system is represented by a voltage source of 1.0PU in series with a transient reactance of j0.20 PU. The generator is transmitting an active power of 1.0 PU when a 3 Φ fault occurs at its terminals. If the fault is cleared in 100 millisecond determine if the system will remain stable by calculating the swing curve.

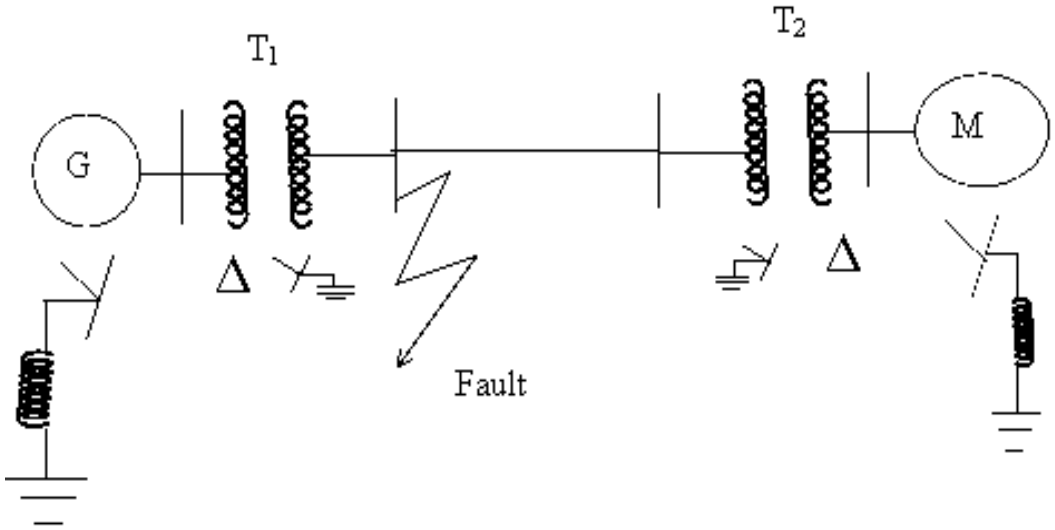
5. a) A two-pole 50 Hz 11 KV turbo alternator has a rating of 100 MW, power factor 0.85 lagging. The rotor has a moment of inertia of a 10,000 Kgm^2. Calculate H and M.
b) Explain why transient stability limit is lower than steady state stability limit.

6. The positive-sequence reactances for the power system shown in figure are in per unit on a common MVA base. Resistances are neglected and the negative-sequence impedances are assumed to be the same as the positive-sequence impedances. A bolted line-to-line fault occurs between phases b and c at bus 2. Before the fault occurrence, all bus voltages are 1.0 per unit. Obtain the positive sequence bus impedance matrix. Find the fault current, the three-phase bus voltages during fault and the line currents in each phase.



7. Define and classify the problem of power system stability. Derive the expression for Synchronizing Power Coefficient.

8. A double line-to-ground fault occurs on lines 'b' and 'c' at point 'F' in the system as shown in figure. Find the sub transient current in phase 'c' of machine -1 assuming prefault currents to be zero. Both machines are rated 1200 kVA, 600 V with reactances of $X'' = X_2 = 10\%$ and $X_0 = 5\%$. Each three-phase transformer is rated 1200 kVA, 600 Y-Δ / 3300 Δ-Y with leakage reactance of 5%. The reactance of the transmission line are $X_1 = X_2 = 20\%$ and $X_0 = 40\%$ on a base of 1200 kVA, 3300 v. The reactances of the neutral grounding reactors are 5% on the kVA base of the machines, using Z_{BUS} *method*.



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CODE No.:10BT70204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

FLEXIBLE AC TRANSMISSION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the constraints that limit the power flow and discuss the conventional ways to overcome these constraints?
b) Explain the concept of power flow in parallel paths with neat diagrams.

2. a) Discuss the principles of conventional reactive power compensators.
b) Explain the basic types of FACTS controllers give an example for each type.

3. Draw and explain the 48-pulse voltage source converter operation.

4. a) What is the importance of static shunt compensation in prevention of voltage instability? Explain.
b) Explain, how shunt compensation will damp the power oscillation.

5. Write a short notes on the following
a) Switching converter type VAR generators
b) Hybrid VAR generators.

6. Explain the working principle and V-I characteristics of STATCOM. Explain the enhancement of transient stability by the STATCOM.

7. a) What are the objectives of series compensation and explain in brief?
b) Write note on approaches to controllable series compensation.

8. a) Explain the basic operating control scheme of TCSC.
b) Explain GTO Thyristor controlled series capacitor with neat sketch.

CODE No.:10BT70401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about the various statistical analysis that are used in measuring data.
b) Explain how a basic meter is converted to DC or AC Voltmeter. Also draw the circuit diagram of TVM.

2. a) Discuss with help of a neat circuit diagram the elements of a standard signal generator.
b) Distinguish between the fixed frequency oscillator and variable AF oscillator.

3. a) Define a wave analyzer. Differentiate between a Wave analyzer and spectrum analyzer.
b) Explain Logic analyzer with a neat block diagram.

4. a) Explain in detail the principle of operation of single beam CRO.
b) Explain the use of CRO for frequency measurement.

5. a) Explain with a diagram the principle of analog storage CRO.
b) Explain how the time and phase can be measured by a CRO.

6. a) List the Errors and precautions in using bridges.
b) Explain the features of Wein bridge and list its applications.

7. a) Describe the principle of operation of accelerometer.
b) Explain the principle of operation of Thermistor and mention its advantages and limitations.

8. a) Explain in detail about single channel DAS.
b) Discuss in detail about testing of audio amplifier.

CODE No.:10BT70402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

DIGITAL IMAGE PROCESSING

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe an image model with a neat sketch. Explain how digital images are represented.
b) What is meant by Adjacency, connectivity, Regions and Boundaries?

2. a) Explain and list the properties of Slant transform.
b) Explain and list the properties of Haar transform.

3. a) Explain the various methods of point processing for Image enhancement.
b) Distinguish between the smoothing and Sharpening of an Image.

4. a) What are the different types of high pass filters used in image enhancement?
b) Explain the process of Unsharp masking in frequency domain.

5. a) What is meant by Noise in an image? Discuss the mean Filters for restoration in the presence of noise.
b) Describe about image restoration-degradation models in detail.

6. a) Describe the significance of Laplacian operator. Explain with an example, how the edges are detected with this operator.
b) Explain the concept of motion in segmentation. What is its use?

7. a) Explain dictionary based compression technique.
b) Write notes on Image compression standards.

8. a) What is mean by Pseudo coloring? For what purpose is it useful? Explain how Pseudo color image can be obtained.
b) Briefly, explain color image histogram equalization technique.

CODE No.:10BT70405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

EMBEDDED AND REALTIME SYSTEMS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write short notes on Design Productivity gap.
b) Explain why single purpose processors and general purpose processors are essentially the same, and then describe how they differ in terms of design metrics.

2. Describe the architecture of a typical microcontroller with a neat diagram.

3. a) Explain FSM model with example.
b) Explain PSM model with example.

4. a) Explain the signal using a transfer of byte when using the I2C bus and also the format of bits at the I2C bus with diagram.
b) Explain the internal serial communication device.

5. a) Explain EDF scheduling algorithm
b) Define task and explain different states of task.

6. a) What is the function of a semaphore? Explain with suitable examples.
b) Differentiate signals and pipes with respect to their functions in Embedded Systems.

7. a) Explain how software is embedded into a system.
b) Explain the methods used in the embedded system on a chip.

8. a) Describe the new challenges created by cores for processor developers as well as users.
b) Describe each tool that has enabled the elevation of software design and hardware design to higher abstraction levels.

CODE No.:10BT70408

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

RADAR SYSTEMS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the radar range equation and explain the parameters involved.
b) State the radar frequency bands.

2. a) Bring out the advantage of integration of radar echoes with an example.
b) In a radar receiver, the mean noise voltage is 80 mV and the IF bandwidth is 1 MHz. If the tolerable false alarm time is 25 minutes, calculate the threshold voltage level. Also calculate the probability of false alarm.

3. a) Draw the block diagram of FM-CW radar and explain its operation.
b) Estimate the range with the data: Modulation frequency- 100 KHz, Doppler shift -1.75 KHz, Beat frequency - 60 Hz.

4. a) Draw the block diagram of an MTI radar which uses power amplifier and explain its operation.
b) Differentiate blind speeds and blind phases. Also distinguish between MTI radar and MTI with single delay line canceller.

5. a) What are the limitations of conical scan?
b) Explain Amplitude Comparison Mono-pulse Tracking System.

6. a) Discuss the efficiency of non-matched filter.
b) Describe correlation receiver in detail.

7. a) Distinguish between linear array and planar array.
b) Discuss in brief about series *vs* parallel feeds.
c) Explain about the applications of the array in radars.

8. a) What is difference between Synthetic Aperture Radar (SAR) and Phased Array Radar (PAR)?
b) What is the role of SAR as the only practical solution for radar remote?

CODE No.:10BT70421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

ADVANCED MICROPROCESSOR AND MICRO CONTROLLERS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the architectural differences between Intel 80186 and 80286 Microprocessors.
b) Explain the Register Organization of 80286 microprocessors.

2. a) Explain the Memory Management in 80386 and 80486.
b) Explain i) Segment and System Descriptors ii) Descriptor Tables

3. a) Contrast the changes in the memory-management unit and paging when compared to the 80386 and 80486 microprocessor.
b) Explain how the dynamic execution architecture of the Pentium pro functions.

4. a) Contrast the Pentium IV with Pentium and Pentium pro processors.
b) Draw and explain the PIN structure of Pentium IV.

5. a) What are the different types of Interrupts in 8051 and explain the Interrupt Handling mechanism?
b) Explain about the data memory and program memory of 8051 microcontroller and Illustrate how to interface external memory.

6. a) Explain the function of Rotate instruction in 8051. Illustrate with an example program.
b) How do you find the execution time for a set of instructions in the program? Implement a delay program to generate 1ms delay.

7. a) Describe important internal and external interrupt sources in microcontrollers.
b) List the features that are programmable.

8. a) Explain ARM architecture and organization.
b) Discuss the ARM / Thumb instruction set.

CODE No.:10BT70501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

PRINCIPLES OF COMPILER DESIGN

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Consider the following fragment of 'C' code:

```
double x, y;
y =x*x+ x * 7 + 2.9;
```

Write the output at all phases of the compiler for the above 'C' code.

b) Consider the (very artificial) language, over the alphabet of letters and digits and the dollar sign ($), having the following three kinds of tokens: numbers, consisting of one or more consecutive digits; short identifiers, consisting of a single letter; and long identifiers, consisting of one or more letters followed by a single $.Write down a regular expression for each of the three token patterns.

2. a) Write an algorithm for the elimination of left recursion.

b) Construct the predictive parsing table for the following grammar

S → A
A → aB/Ad
B → bBC/f
C → g

3. Construct CLR(1) parsing table for the following grammar

A → −A
A → A−id
A → id

4. a) Distinguish between a parse tree and a syntax tree.

b) Write SDT to generate three address code for arithmetic statements.

5. a) What is the difference between Name equivalence and Structure equivalence? Explain with an example.

b) Write short notes on Dynamic and Static type checking.

6. a) What is an Activation Record? What are the contents of Activation Record?

b) What is heap storage allocation?

7. a) What are Live Variables? Explain the Dataflow Equation for representing the Live Variable at the point of Entry and Exit of Block.

b) Explain the algorithm for Redundant Sub expression elimination using global data Flow Analysis.

8. What is a simple code generator? Write the simple code generation algorithm with the Function GETREG and trace with an example.

CODE No.:10BT70502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

SOFTWARE TESTING TECHNIQUES

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss in detail various phases in a tester's mental life.
b) Explain the importance of bugs.

2. Discuss clearly about path instrumentation with examples.

3. Discuss about data flow testing strategies.

4. Discuss in detail the nice domains and ugly domains with suitable examples.

5. a) Explain about mean processing time of a routine with an example.
b) Explain about the limitations and solutions of applications.

6. What is Logic Based testing? How Karnaugh-Veitch (KV) charts are used in Logic Based Testing?

7. Discuss the following on the state charts.
a) Good and Bad state graphs b) State bugs c) State tables

8. Explain about
a) Synchronization of Test cases b) Regression Testing.

CODE No.:10BT70506

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

EMBEDDED SYSTEMS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss about challenges in Embedded Computing System Design.
b) Explain the characteristics of Embedded Computing Applications.

2. Explain the complete architecture of 8051 with neat sketch.

3. a) Explain about MOVC, MOVX, XCH and XCHD instructions with suitable examples.
b) Write an 8051 ALP program to Clear bit 3 of RAM location 22H without affecting any other bit.

4. a) Write ALP program to add ten BCD numbers and store result in the internal RAM.
b) Give the priority and vector address of interrupts in 8051.

5. Explain the interfacing of keyboard with 8051 microcontroller.

6. Explain about RTOS semaphores with suitable examples.

7. a) Explain about encapsulating semaphores and queues.
b) Explain the techniques used for saving memory space and power while using RTOS.

8. Explain about Instruction level parallelism with an example.

CODE No.:10BT71001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

ANALYTICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the sketch of a Conductivity meter and explain its principle and working.
b) Draw the sketch of a Silica analyzer. Explain its principle and working.

2. a) Explain the working of carbon monoxide monitor.
b) Discuss briefly different instrumental techniques of sulphur dioxide.

3. a) Explain the principle of liquid chromatography and give the applications.
b) Give the specifications and typical values of Columns.

4. a) Explain the principle and working of paramagnetic oxygen analyzer.
b) Discuss different electrochemical methods of oxygen analysis.

5. a) Explain Beer-Lambert law.
b) Explain Optical Null Method type of IR Spectrophotometer.

6. Briefly explain about the atomic emission and absorption spectroscopy.

7. a) Discuss the principle of Nuclear Magnetic Resonance.
b) Explain the principle of operation of X-ray spectrometer.

8. a) What are different nuclear radiation detectors and discuss their role?
b) Discuss the functionality of gamma detector.

CODE No.:10BT71002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

AUTOMATION OF INDUSTRIAL PROCESSES

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. With functional block diagram, describe how a single computer can control two separate loops. Also explain the individual elements.

2. What is smart sensor and explain how it is different from a normal sensor?

3. Describe Zigle-Nicholons closed-loop method of tuning P, PI, PID Controllers.

4. State and Derive the Dahlin's Algorithm.

5. a) Explain the differences between feed back and feed forward control systems.
b) Explain the feed forward control system with an example.

6. a) Explain the cascade control system with an example.
b) Elaborate on multivariable control systems.

7. Write the ladder diagram program for tank level control.

8. Explain the step by step procedure for integration of DCS with PLC and computer.

CODE No.:10BT71005

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

MEMS AND MICROSYSTEMS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Mention any four advantages of MEMS
b) Give various industrial applications of MEMS.

2. a) Which type of sensor is used to measure glucose? How glucose can be measured using a sensor?
b) Write a note on chemi-resistor sensors and chemi-capacitor sensors.

3. A force balanced micro accelerometer is assumed to be modelled on a beam spring system, which is designed using silicon, whose Young's modulus is 190000MPa. An idealized situation is that the entire proof mass 3×10^{-6} kg is concentrated at the centroid of the moving beam. If the distance between the anchors is 600μm and distance between mass springs is 700μm and area moment of inertia of the beam is $10.4\times10^{-24}m^4$, determine the natural frequency, equivalent spring constant and thickness of the beam spring (for a maximum allowable deflection of 5mm).

4. a) Discuss the static bending theory applied to Microsystems.
b) Explain the heat conduction process in multi-layered thin films.

5. a) Explain the method of preparation of single-crystal Silicon ingots.
b) On what factors the choice of wafer depends?

6. a) Explain various ionization techniques used in MEMS industry.
b) Explain in detail, the differences between wet etch, dry etch and RIE.

7. a) List out and explain the design considerations of Microsystems.
b) Explain LIGA process.

8. Write note on the following.
a) Thermo compression wire bonding b) Soldering
c) Anodic bonding d) Silicon fusion bonding

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

WEB PROGRAMMING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain how you would create an Ordered List.
b) Discuss the advantages of CSS.

2. a) Explain about Class and Id selectors with an example.
b) Write a JavaScript for password matching of two input fields.

3. a) What is DTD and give syntax for declaring an attribute in DTD?
b) Explain about SAX and DOM.

4. Explain about cookies and session tracking with an example.

5. a) Discuss about prepared statements.
b) Write a note on java.sql. driver class.

6. a) What are the limitations of Servlets? Discuss how JSP overcomes these Problems.
b) What is MVC architecture? Explain with a neat diagram.

7. What is a JavaBean and how do you declare it in JSP page?

8. Explain about Function tag libraries.

CODE No.:10BT71202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

MOBILE COMPUTING

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the solution for the following problems in wireless communication
   i) Far and near terminal problems
   ii) Hidden terminal problem in wireless communication
   b) Write notes on System Architecture of the GSM.

2. a) With neat diagrams explain in detail the hidden node and exposed node problem.
   b) Explain FDMA with a diagram.

3. a) Briefly describe about physical layer of Bluetooth?
   b) Explain about IEEE 802.11.

4. Discuss in detail about
   a) Selective Retransmission b) Transaction oriented TCP.

5. a) Explain power-aware and Context aware Computing.
   b) Define the terms
   i) Hoarding Techniques ii) Client -Server Computing

6. Describe pull-based mechanisms.

7. Explain Destination-Sequenced Distance Vector (DSDV) protocol.

8. Explain about the architecture of WAP gateway.

CODE No.:10BT71203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

MULTIMEDIA AND APPLICATIONS DEVELOPMENT

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail about Multimedia Software Tools.
b) Explain about various Graphics and Image Data types.

2. a) Discuss SQNR and its significance.
b) Discuss the types of video signals.

3. Illustrate different types of constructor functions in Action Script 2.0.

4. Explain overriding Instance Methods, Class Methods and Properties.

5. Explain OOPS action development using components of Action Script 2.0.

6. a) What is variable-length coding?
b) Explain Huffman coding and Adaptive Huffman coding.

7. a) Explain about Audio Compression Technique ADPCM in speech coding.
b) Explain about Video Compression based on Motion Compensation.

8. Explain about Multimedia over IP.

CODE No.:10BT71204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

CRYPTOGRAPHY AND NETWORK SECURITY

[Information Technology, Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write a short note on security services and attacks.
b) Explain about Playfair cipher and Hill cipher techniques with example.

2. a) With the help of a neat sketch, explain a single round of DES algorithm.
b) Discuss the security issues of DES algorithm.

3. a) Differentiate between conventional and public key encryption techniques.
b) Explain about steps involved in exchange of public key certificates.

4. a) Explain the importance of MIME and S/MIME.
b) Explain general format of PGP message.

5. a) Explain about IPSEC services.
b) Explain about ESP format in IP security.

6. a) What are web security threats? What are the consequences and counter measures of such security threats?
b) Explain the construction of digital signature in SET.

7. a) Explain different intrusion detection mechanisms.
b) What is antivirus? What are the different antivirus approaches?

8. a) With neat diagrams show the differences between screened host firewall single homed bastion and screened host firewall dual homed bastion.
b) List the common criteria for Information Technology Security evolution.

CODE No.:10BT71208

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

SOFTWARE PROJECT MANAGEMENT

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the predominant process used for the software cost estimation.
b) Discuss with suitable comparison about the three generations of software development.

2. How to improve team effectiveness?

3. Describe the artifacts captured in the management set.

4. Define workflow. Explain about software process workflow.

5. a) Explain about periodic status assessments.
b) Discuss planning guidelines.

6. a) Explain bottom-up approach of project planning.
b) What are the activities of Software development team over the project life cycle?

7. a) Define Software metrics. Explain purpose and perspectives of seven core software metrics.
b) With all the basic parameters, describe Financial Performance measurement through an earned value approach.

8. a) What is the impact of degree of rigor, formality and change freedom inherent in a specific project's contract? Explain.
b) Differentiate between schedule distribution across phases for small and large projects with an example.

CODE No.:10BT71222

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

SOFTWARE ARCHITECTURE

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write about the current state of software technology?
b) Explain the status of software architecture.

2. Write short note on
a) Layered Approach b) Pipe-and-Filter approach

3. Explain in detail about architectural structure for Shared Information Systems.

4. What is meant by interoperability? Discuss with respect to World Wide Web.

5. Write Short note on
a) Architectural Patterns b) Structural Patterns.

6. a) Explain MVC pattern.
b) What are variants of Proxy pattern?

7. Explain application of ADL in system development.

8. a) What is Component based system?
b) Discuss the architecture of legacy system.

CODE No.:10BT71301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

NEURAL NETWORKS AND FUZZY SYSTEMS

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Using McCulloch -Pitts model implement the following logic function
i) AND gate ii) NAND gate iii) OR gate iv) XOR gate
b) Differentiate Biological and Artificial neuron models.

2. a) Explain momentum method for error back-propagation training.
b) Explain the effect of following factors on error-back propagation training.
i) Learning constant ii) Steepness of the Activation function

3. a) Derive the condition for stability of discrete Hopfield network.
b) The following unipolar binary vectors must be stored in the recurrent auto associative memory using the outer product method with the nullification of the diagonal.
$S^{(1)} = [\,1\ 0\ 0\ 1\ 0\,]^t$ $S^{(2)} = [\,0\ 1\ 1\ 0\ 1\,]^t$ $S^{(3)} = [\,1\ 1\ 0\ 1\ 0\,]^t$, Compute matrix W.

4. Differentiate ART1 and ART2 based on
a) Architecture b) Algorithm

5. a) Compare and contrast crisp sets & fuzzy sets.
b) X={x1, x2, x3}; Y= {y1, y2}; Z= {z1, z2, z3}. Let $\tilde{R}$ be a fuzzy relation,

$$\begin{bmatrix} 0.5 & 0.1 \\ 0.2 & 0.9 \\ 0.8 & 0.6 \end{bmatrix}$$

where X represents rows, Y represents columns.

Let $\tilde{S}$ be the fuzzy relation where Y represents rows, Z represents columns.

$$\begin{bmatrix} 0.6 & 0.4 & 0.7 \\ 0.5 & 0.8 & 0.9 \end{bmatrix}$$

Find **R o S** by max-min composition.

6. Write short notes on the following
a) Fuzzification interface. b) Knowledge base in fuzzy logic controller.

7. Write short notes on the following:
a) Knowledge base in fuzzy logic control system.
b) Decision making logic in fuzzy logic control system.

8. a) Describe the design of fuzzy logic control with a Temperature controller as an example.
b) Explain how ANN is used for Load forecasting.

CODE No.:10BT71302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

PROGRAMMABLE LOGIC CONTROLLERS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the functions of PLC CPU? Explain their operational sequence.
b) Explain the construction of PLC ladder diagrams.

2. a) Explain about PLC input instructions.
b) Explain in detail about the operational procedures of PLC.

3. a) Explain the following
i) AND gate and relay and PLC equivalents
ii) NOR gate and relay and PLC equivalents
b) Draw the necessary ladder diagram for spray process control.

4. a) Explain in brief about holding, input and output registers.
b) Explain the timer functions and industrial applications.

5. a) Discuss about the advanced comparison functions of PLC and explain one of their applications.
b) Explain PLC conversions between DECIMAL and BCD.

6. a) How do you move blocks of PLC data? Explain different methodologies.
b) How JUMP differs from SKIP and MCR functions?

7. a) Design a morse code system with shift register functions.
b) Explain about the PLC sequencer functions and its applications.

8. Write short notes on:
a) PLC analog modules
b) PID modules.

CODE No.:10BT71501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

NETWORK PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the OSI reference model and Unix Standards.
b) Explain about the three states of TCP connection establishment and termination.

2. a) What are the four functions to pass socket address structure from kernel to the process? Explain.
b) Compare the implementation details of concurrent and iterative server.

3. Discuss the following scenario of server operations
i) Crashing of server host
ii) Crashing and rebooting of server host
iii) Shutdown of server host

4. a) Explain IPv6 socket options.
b) What are the various I/O models?

5. a) What are the two functions used in Elementary UDP? Write briefly about lack of flow control with UDP.
b) Explain with sample code how a connected UDP socket can be used to determine the outgoing interface.

6. Explain in detail DNS.

7. Explain the concept of IPC using pipes.

8. a) Describe 'rlogin'.
b) What are the various terminal modes?

CODE No.:10BT71502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

SOFT COMPUTING TECHNIQUES

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Differentiate between supervised and unsupervised learning.
b) Implement OR function using Mc-Culloh-pitts-neuron model with binary inputs and targets.

2. a) What are Artificial Neural Networks? What are their characteristics?
b) Explain the historical development of Artificial Neural Networks.

3. a) Modify the given linguistic terms with hedges for the given terms

$$small = \left\{ \frac{1}{1} + \frac{0.8}{2} + \frac{0.6}{3} + \frac{0.4}{4} + \frac{0.2.}{5} \right\}$$

$$large = \left\{ \frac{0.2}{1} + \frac{0.4}{2} + \frac{0.6}{3} + \frac{0.8}{4} + \frac{1.}{5} \right\}$$

Find for "not very small and not very very large"

b) The membership values of particle occlusion and lens occlusion is given by Fuzzy set A and B defined on the Universe **X={x1,x2,x3,x4,x5}** and **Y={y1,y2,y3,y4,y5}** respectively. Establish the relationship between particle occlusion and lens occlusion in order to track the soil particle movement.

$$A = \left\{ \frac{0.1}{x1} + \frac{0.9}{x2} + \frac{0.0.}{x3} \right\} \quad B = \left\{ \frac{0}{y1} + \frac{1}{y2} + \frac{0.}{y3} \right\} \quad C = \left\{ \frac{0.3}{x1} + \frac{1.0}{x2} + \frac{0.0.}{x3} \right\}$$

Let C be a fuzzy set that gives the tracked particle in slightly more occlusion, which is added to the antecedent A. Find the membership for the image quality.

4. a) Explain the applications of Adaptive Resonance Theory.
b) Explain the applications of Associative memory.

5. a) Mention the operations performed on crisp relation.
b) What are the different properties of fuzzy sets?

6. a) Consider the following facts.
i) The members of the club are Joe, Sally, Bill and Ellen.
ii) Joe is married to Sally.
iii) Bill is Ellen's brother
iv) The spouse of every married person in the club is also in the club.
Represent the above facts in predicate logic.
b) List applications of Fuzzy logic.

7. Explain binary encoding for knapsack problem in detail.

8. a) Discuss the categorization of bit-wise operators.
b) What is Mutation? Explain with an example.

CODE No.:10BT71503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

ARTIFICIAL INTELLIGENCE

[Computer Science and Systems Engineering, Information Technology (RA)]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe a state space in which deepening search performance much worse than depth-first search.
b) Prove that the breadth first search is a special case of uniform cost search.

2. a) Explain the significance of using heuristic functions with an example.
b) Explain why the process of generating predecessors in backward search does not need to add literals that are negative effects of the action.

3. a) Construct a knowledge base for the WUMPUS world using the syntax and semantics of prepositional logic.
b) Explain the reasoning patterns in propositional logic.

4. a) Describe in detail the steps involved in the knowledge Engineering process.
b) Compare and contrast various logic languages and list pros and cons of propositional logic.

5. a) Explain Mental Events, Mental Objects in detail.
b) Explain semantic networks in detail with an example.

6. a) Discuss in detail about the basic probability notations.
b) Explain the terms prior and posterior probabilities.

7. a) Define Inductive learning. How statistical learning method differs from reinforcement learning method?
b) Explain Inductive learning in detail with an example.

8. a) Explain fuzzy sets and crisp sets with suitable example.
b) Write short notes on Sugeno style of fuzzy inference processing.

CODE No.:10BT72301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

COMPUTATIONAL MOLECULAR BIOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Write an essay on active areas of research in computational molecular biology.

2. Discuss gene expression methods.

3. Write notes on gene expression profiling with DNA microarrays.

4. Discuss about Protein secondary prediction from sequence.

5. Give an account on comparative modeling for protein 3D structure prediction.

6. Describe character based method for phylogenetic tree construction.

7. Explain cluster analysis with special reference to hierarchical method.

8. What is molecular docking? Write briefly about types of docking and their applications.

CODE No.:10BT72302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January – 2014

BIOETHICS, BIO SAFETY AND INTELLECTUAL PROPERTY RIGHTS

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. What is cloning and what are the ethical issues involved with cloning.

2. Write short notes on
i) Stem cells ii) Applications of cloning

3. Give an account on biosafety procedures to be adopted for recombinant DNA products and biosafety guidelines in India.

4. What are GMP's where they are applied?

5. Write short notes on
a) Legal implications b) Trade secrets

6. Explain the laws and objectives of patent system and intellectual property protection.

7. Name some international conventions on biotechnology and explain.

8. What are the biosafety guidelines to be followed for GMO's

CODE No.:10BT72303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

DOWNSTREAM PROCESSING

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Give a broad outline of the downstream processing steps in bioproduct recovery.

2. a) You are given with medium containing bacterial and fungal cells and asked to separate cells from the medium using centrifugation or filtration. Which one will use choose for separating bacterial and fungal cells. Justify.
b) Explain different homogenization methods for disruption fungal cells.

3. a) What is the principle of centrifugation? Explain how cells can be separated from fermentation broth using tubular bowl centrifuge.
b) What are the different flocculants used in bioprocess industries used for separation? Explain the mechanism of flocculation.

4. a) What are the factors that affect the performance of the membranes? Explain.
b) Explain how to minimize impeding factors that influence performance of membrane separation.

5. a) What is principle of aqueous two phase extraction? What are the merits and demerits of aqueous two phase extraction over solvent extraction?
b) Explain the three phase diagram for partially miscible solvent system.

6. a) Write briefly how electrophoresis principle is used to separate the nucleic acids.
b) Explain the principle, function and applications of 2D-electrophoresis.

7. a) Write short notes on paper and thin layer chromatography. What are their applications?
b) With the use of gel filtration, how would you determine the molecular weight of unknown protein?

8. a) What is crystallization and at what stage this step is used in protein purification? What are the factors affecting the rate of crystallization and explain why?
b) Under what conditions, foam based separation techniques are used in bio separations? Explain the principle behind this process.

CODE No.:10BT72304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

NANOBIOTECHNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Write notes on:
   a) Basics of Nanobiotechnology
   b) Nano sensors
   c) Current status and future perspective of Nanobiotechnology.

2. Write an essay on role on size of nano materials and classification of nano materials.

3. Explain about:
   a) Interphase systems.
   b) Protein based Nanostructures.
   c) DNA-based Nanostructures.

4. What is e-beam Lithography and explain with suitable examples?

5. What are quantum dots? Write about its applications in Bio-imaging.

6. Explain the applications of Magnetotactic bacteria with suitable examples.

7. Explain the role of plants in nanoparticles synthesis and write their applications.

8. Write a short notes on:
   a) Molecular motors
   b) Development nano luminescent tags

CODE No.:10BT72308

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

CANCER BIOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. What is mutation? How it will effect in signal molecules?

2. Discuss in detail, the stages of cell cycle. How is it dysregulated in cancer cells?

3. Describe chemical carcinogens, with the targets of chemical carcinogens and their mode of action with suitable examples.

4. Give a comprehensive review on breast cancer, in terms of the disease incidence, genetic factors, staging, histological types and management.

5. Write short notes on:
a) Brachy therapy b) Retro viruses

6. Explain the molecular machinery of apoptosis.

7. Describe about various prediction methods for aggressiveness of cancer.

8. Write a short notes on:
a) Chemotherapy b) Immunotherapy

CODE No.:10BT72310

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

BIOPHARMACEUTICAL TECHNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain sources of drug from plant and mineral origin.

2. Explain various factors affecting absorption of drugs.

3. a) Discuss ion channels and enzymes as receptors.
b) Explain with an example, how pharmacodynamic analysis is carried out?

4. Explain the concepts of ICH guidelines on current good manufacturing practices.

5. Explain the production of liquid oral dosage forms.

6. Explain the production of cytokines and tumor necrosis factor.

7. Discuss the polymers used in liposomal delivery.

8. Discuss the role of biopharmaceuticals in the treatment of cancer.

CODE No.:10BT80504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations January - 2014

CLOUD COMPUTING

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Discuss about the characteristics of Cloud Computing and its Trust Protocol.

2. a) Discuss the evolution of Cloud Computing in detail.
b) Explain about the on-demand computing with an example.

3. a) What is Virtualization? Describe the various reasons for using virtualization.
b) Describe the objective of virtualization and virtual service desk.

4. Explain Para Virtualization with examples.

5. Explain in detail the various Security threats and vulnerabilities related to Cloud Computing.

6. a) With suitable examples, explain the disasters a Cloud is prone to encounter.
b) Explain how the above encountered disasters to a Cloud can be managed effectively.

7. Differentiate a graph and tree. Explain any two applications of graph reduction.

8. Compare the features of Virtual Iron and Xen virtualization technologies.

CODE No.:10BT61302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ROBOTICS AND AUTOMATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Briefly explain the different types of automation in detail.
b) Enumerate the different phases of a typical automation migration strategy.

2. What are cylindrical, polar arm configurations and explain the advantages of the former over later.

3. With appropriate applications, explain the following with neat illustration:
i) Acoustic sensor ii) Laser iii) Tactile sensor

4. Explain the working principle of three types of actuators used in robots along with sketches.

5. Using the grid work for a robot with one rotational and one linear axis, show the path taken by the robot if it is directed to move between the following sets of points in the grid using linear interpolation.
a) Point (1, 1) and point (6, 6)
b) Point (2, 1) and point (8, 2)
c) Point (2, 2) and point (7, 5)

6. Program the robot to pick up two blocks (of different sizes) from fixed position on either side of a center position and to stack the blocks in the center position. The larger block will always be on one side of the center and smaller block will always be on the other side of the center position. The smaller block is to be placed on top of the larger block.

7. a) What things might a robot hand be able to do that a human hand cannot do?
b) What are the limitations of pneumatic actuators?

8. What do you mean by edge detection? Describe a quantitative technique to find out the edge of an object.

CODE No.:10BT70402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

DIGITAL IMAGE PROCESSING

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss in detail sampling and quantization of Images.
b) Define spatial resolution. What is its effect on Image processing?

2. a) List any 3 properties of 2D - FFT.
b) What is Hotelling transform and list any 2 properties of the same?

3. Explain following spatial filters
i) Median filter
ii) Min. filter
iii) Max.filter
iv) Low pass filter

4. a) List any 3 properties and show their correspondence in the spatial and frequency domains.
b) Explain Image sharpening filter in frequency domain.

5. a) Write notes on estimating the degradation function with respect to Image restoration.
b) Explain inverse filtering.

6. a) Explain about region based segmentation.
b) Discuss about edge formulation and its detection.

7. a) Discuss the lossy predictive coding with the help of block diagram.
b) Explain about image compression standards.

8. a) How is smoothing achieved in the color image processing?
b) What is Pseudo color image processing?

CODE No.:10BT70405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

EMBEDDED AND REALTIME SYSTEMS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Briefly discuss various common characteristics of embedded system.
b) Describe in detail about IC technology.

2. a) What is meant by pipelining? Describe its operation in general purpose processors.
b) Give a brief description of assemblers, debuggers and emulators.

3. a) Describe the program state machine model.
b) Explain the role of processes and threads in concurrent process model.

4. a) Discuss about RS232 serial communication interface.
b) Give the salient features of IEEE 1394 interface.

5. a) Give the classifications of Scheduling algorithms in RTOS concepts.
b) What are the commercial RTOs in embedded systems?

6. a) Describe the role of semaphore in RTOs with examples.
b) Discuss about the process of Mutex.

7. a) Discuss about ARM microcontroller.
b) What are the different debugging techniques in embedded system?

8) Describe and differentiate logic synthesis and RT synthesis.
b) Describe reuse of intellectual property codes.

CODE No.:10BT70502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

SOFTWARE TESTING TECHNIQUES

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the consequences of bugs in detail.
b) Discuss about the structural bugs.

2. a) Write a short note on inspections, review and walkthroughs.
b) Write about static *Vs* Dynamic Anomaly detection.

3. a) Explain in detail about the sensitization and instrumentation based on transaction flows.
b) Write a short note on self test support and transaction dispatcher.

4. a) State and explain various restrictions in domain testing process.
b) Explain complete and incomplete domain boundaries.

5. Write short notes on the following:
a) Path Loops
b) Path products
c) Lower path count arithmetic.

6. a) Discuss three variable KV chart with an example.
b) Discuss four and more variables KV chart with example.

7. a) Write and explain the algorithm for node reduction.
b) What are the principles of state testing? Mention its advantages and disadvantages.

8. Explain the different types of checkpoints and steps for creating different check points in QTP.

CODE No.:10BT71007

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

TELEMETRY AND TELECONTROL

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain about Data presentation techniques used in Telemetry system.

2. Explain the following terms.
   a) Alternate Mark Inversion
   b) Radix, Redundancy and Efficiency
   c) Quantization
   d) ASCII Code

3. Explain the concept of different electrical systems used in short distance telemetering.

4. What is pulse time modulation? Write about its types and explain pulse width modulation.

5. Explain in detail about telemetry and communications in satellite telemetry.

6. What are the single mode fibers and explain them in detail with necessary figures and equations.

7. Explain in detail about microwave telemetry.

8. a) With a neat sketch, explain the Telecontrol system used in short wave transmission installation.
   b) Give an account of Telecontrol console.

CODE No.:10BT80108

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

GROUNDWATER DEVELOPMENT AND MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define the aquifer and write about the different types of aquifers with suitable examples.
b) Enlist the properties of rocks affecting the groundwater and explain any one in detail

2. a) What is Darcy's law? Describe its experimental verification.
b) Describe the experiment for determining the permeability of a soil sample using constant head method.

3. a) Write the assumptions and limitations of Dupuits solution.
b) Derive an expression for discharge from fully penetrating well in an unconfined aquifer.

4. a) Explain the thesis solution for unsteady confined aquifer to find out Transmissibility and storage coefficient of aquifer.
b) Explain the correction the Jabcob proposed for very thin aquifers under water table conditions. State, why the correction is required.

5. a) Explain the principle involved in resistivity method. Also, state the methods of survey and types of electrode configuration.
b) Write about the different methods of interpretation of resistivity data.

6. Describe the artificial recharge methods of groundwater from different sources.

7. a) Explain the occurrence of saline water intrusion.
b) Indicate the methods to control sea-water intrusion and explain them.

8. a) Explain the concepts of groundwater basin management.
b) What is 'Groundwater basin management by conjunctive use'? Explain in detail.

CODE No.:10BT80504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

CLOUD COMPUTING

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Mention any two services on each of following :
i) Network Edge ii) Customer Edge iii) Data Center Edge
b) Explain various phases of SLA Lifecycle.

2. a) What are the various kinds of cloud computing architectures?
b) How a Word processor application can be used as a service in cloud environment?

3. a) Illustrate Eucalyptus Platform Architecture and analyze the need of Walrus in it.
b) Analyze about RSS and Atom syndication formats; argue which one should be considered technically between the two. Mention the reasons.

4. a) Draw the flow chart of SLA management in Cloud and mention the importance of any two phases.
b) Illustrate Aneka Platform and its building blocks.

5. a) Bring out the difference between XML and JSON representation.
b) Discuss the concept of Cloud Supply Chain (C-SC) and Compare Traditional and Emerging ICT supply chains.

6. a) "Natural candidates for services supporting multiple applications in a VPC has been done where the deployment is made in VPC ". Explain the statement using appropriate pattern in brief.
b) Analyze the need of Virtual Machine instead of Dual boot.

7. a) Mention the risks involved in cloud Migration.
b) Illustrate the sequence of interactions between web application and end user of XACML and OAuth protocol with suitable case study.

8. Explain in detail features of Hadoop.

CODE No.:10BT81001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

INDUSTRIAL ELECTRONICS

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With a neat sketch, Explain chopper stabilization in DC amplifiers.
b) Draw a bridge balanced DC amplifier and explain how emitter drift is compensated by using series compensation.

2. a) Draw the block diagram of a series voltage regulator and give the function of each constituent unit.
b) Classify drift techniques for protection and briefly explain them.

3. a) Neatly represent the basic structure and symbol of SCR.
b) Explain the principle of operation of SCR in detail.
c) Mention any three applications of SCR.

4. a) What is meant by commutation of an inverter?
b) What are the typical uses and requirements of a practical inverter?

5. a) Explain the construction and principle of operation of TRIAC in detail.
b) With the help of circuit diagram and waveforms, explain the working of Jones chopper.

6. With the help of neat sketches, Explain in detail about CNC machine.

7. a) Elaborate in detail about digital timer counting unit.
b) Draw the block diagram of electronic timer system and describe the function of each constituent.

8. a) Explain how induction heating is superior to conventional methods of heating in industry.
b) Explain the principle of dielectric heating.
c) How dielectric heating is used in electronic sewing

CODE No.:10BT82304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

FOOD SCIENCE AND TECHNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. How the food serves as a source of energy? Explain.

2. Define water activity. Discuss the effect of water activity in improving the shelf life of foods.

3. Briefly comment on microorganisms associate with sea food products and its preservation methods.

4. Describe the chemical and biological methods of food preservation.

5. Define food enzymes. Illustrate the commercial food enzyme applications in the food industry.

6. Explain in detail Food additives and toxicants.

7. Explain the common unit operations applied in the processing line of any food processing unit.

8. Write the objectives of food quality assurance. How the quality control in food processing affects the shelf life of the food products?

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

MANAGEMENT SCIENCE

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What do you mean by management skills? Discuss.
b) Discuss the major characteristics of management as profession.

2. a) Explain the salient features of classical theory of organization.
b) What are the advantages of departmentation?

3. a) What are the various types of layout? Explain all of them.
b) Discuss various forecasting techniques.

4. a) Describe in detail ABC analysis. State its applications.
b) A company uses annually 50,000 units of an item each costing Rs. 1.20. Each order costs Rs. 45 and inventory carrying costs 15% of the annual average inventory value.
Find i) EOQ ii) Total annual cost iii) Time between orders

5. a) Outline the policies and principles of HRM.
b) Explain different merit rating methods.

6. A small project is composed of 8 activities whose time estimates are listed in the table below.

Activity	Predecessors	Estimated Duration (Weeks)		
		Optimistic	Most Likely	Pessimistic
A	-	1	1	7
B	-	1	4	7
C	-	2	2	8
D	A	1	1	1
E	B	2	5	14
F	C	2	5	8
G	D, E	3	6	15
H	F, G	1	2	3

a) Draw the project network and determine the expected project completion time.
b) What duration will have 95% confidence of project completion?

7. a) Explain the term 'Entrepreneur'. State the characteristics of an entrepreneur.
b) Differentiate between entrepreneur and manager.

8. a) State and explain salient features of intellectual property rights.
b) Explain the role of information technology in management decision making.

CODE No.:10BT60405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

VLSI DESIGN (ELECTIVE-III)

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the basic CMOS circuit and list out the advantages of BiCMOS Technology over CMOS Technology.
b) Explain how a bipolar NPN transistor is included in N well CMOS processing.

2. a) Draw the voltage transfer characteristics curve of CMOS inverter. Explain the operation and obtain the expression for currents in various regions of operation.
b) Explain the pass transistor logic. Implement 2×1 Multiplexer in pass transistor logic.

3. a) Explain the design rules for wires and contacts.
b) Design and draw the layout of CMOS NOR gate and explain its working.

4. a) What is meant by sheet resistance R_s? Explain the concept of R_s applied to MOS transistors.
b) What is meant by standard unit of capacitance? Give some area capacitance calculations.

5. a) Explain the construction of transmission gate based adder in detail.
b) Explain the operation of 8×8 barrel shifter with neat sketch.

6. a) Draw the schematic of CPLD and compare with FPGA Design.
b) Draw the SRAM core cell and explain its core operation in detail.

7. a) With respect to synthesis process, explain the following
i) Flattening ii) Factoring iii) Mapping
b) What are the types of simulations? Explain in detail.

8. a) Explain the basic sources of errors in CMOS Circuit and how they are tested in synthesis process.
b) What is adhoc testing? Explain the common techniques in the process.

CODE No.:10BT61302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

ROBOTICS AND AUTOMATION (ELECTIVE-IV)

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. With the aid of the diagram describe a flexible machining cell with some special example problem. Indicate two alternative layouts of the cell.

2. a) State the laws of robotics.
b) With the illustration of line diagram explicate basic components of a Robot system.

3. a) What kind of applications requires the robot to be designed with non-contact sensors?
b) Identify the non-contact sensors for these applications and explain their working principle.

4. A D.C servo motor is used to actuate speed of a robot joint. It has torque constant of 10in-lb/A and voltage constant of 12 V/Kr/min (1Kr/min =100r/min) The armature resistance is 2.5 Ω. At a particular moment during the robot cycle, the joint is not moving and a voltage of 25 V is applied to the motor.
a) Determine a torque of the motor immediately after the voltage is applied.
b) As the motor accelerates, the effect of back-emf is to reduce the torque determine the back emf and corresponding torque at 250 rpm and 500 rpm.
c) Sketch a graph between the torque and the speed.

5. Draw a two link manipulator and derive the equations of motion using the Lagrangian - Euler formulation.

6. a) In robot programming, explain three methods to define the positions in space.
b) Using the 8×8 square grid, show the path taken by a Cartesian coordinate robot if it is directed to move between the following sets of points in the grid using linear interpolation: (i) Point (1, 1) and Point (6, 6). (ii) Point (2, 1) and Point (8, 2). (iii) Point (2, 2) and Point (7, 5).

7. For each of the following applications, What is a good choice for the type of electric motor used? Justify your choice.
a) Ceiling fan
b) Electric trolley
c) NC milling machine
d) Electric crane
e) Disk drive motor
f) Windshield wiper motor
g) Washing machine
h) Clothes dryer

8. Discuss about differences between the proximity and range sensors with their applications in robots.

CODE No.:10BT70402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

DIGITAL IMAGE PROCESSING (ELECTIVE-IV)

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the various applications of DIP.
b) Write notes on the mathematical tools used in Digital Image Processing.

2. a) Write the equation of forward & inverse 2D DFT and explain its properties.
b) Derive Walsh transform kernel matrix for N=4.

3. a) What is meant by Histogram of an image? Explain with an example, how the histogram equalisation will be done.
b) Explain first order & second order derivative filters in spatial domain.

4. Give the expression for 2-D Butterworth High pass filter transfer function and sketch it. Explain its usefulness in Image enhancement.

5. a) Explain Weiner filter along with its mathematical background.
b) Write notes on Constrained least squares filtering.

6. a) Write short notes on the region based segmentation.
b) Write notes on Edge detection.

7. a) Discuss about image Fidelity Criterion.
b) Explain psycho visual redundancy.

8. a) Describe the colour image sharpening process in detail.
b) Explain how HIS colour model can be converted to RGB and *vice versa***.**

CODE No.:10BT70405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

EMBEDDED AND REALTIME SYSTEMS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail the overview of Embedded Systems.
b) Describe the concept of custom single purpose processor design (RT-level).

2. Describe various issues in the programmer view of a general purpose processor.

3. a) What is meant by extended finite state machines? Also describe its importance.
b) Give a brief description of message passing and shared data.

4. a) Describe the need for communication interfaces.
b) Give the description of CAN interface.

5. a) What is meant by kernel? Explain its architecture.
b) Explain the significance of resource sharing in RTOS.

6. a) Describe the role of semaphore in RTOs with examples.
b) Discuss about the process of Mutex.

7. a) Give the salient features of THUMB instructions in ARM processor.
b) b) Discuss various flags used in ARM processor.

8. a) Describe in detail about behavioral synthesis.
b) Discuss about verification approaches in design technology.

CODE No.:10BT70502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

SOFTWARE TESTING TECHNIQUES (ELECTIVE-III)

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Give brief description about the consequences of bugs.
b) Discuss in detail about the purpose of testing.

2. a) Explain, how the control flow graphs differ from flow charts.
b) Explain about multi entry and multi exit routines and fundamental path selection criteria.

3. Explain the data flow graphs in detail.

4. What is domain testing? Explain it in detail and also mention the applications of it.

5. a) What is the looping probability of a path expression? Write and explain with an example, the arithmetic rules.
b) Explain the applications of paths and regular expressions.

6. a) Minimize the function using Karnaugh map method:
$F(A, B, C, D) = \sum (1, 2, 3, 8, 9, 10, 11, 14) + \sum d(7, 15)$
b) Demonstrate by means of truth tables the validity of the following theorems by Boolean algebra: i) Distributive Law over + ii) Associative Laws

7. Explain state bug and transition bug in detail.

8. a) Explain with an example, the steps for testing an application using QTP.
b) Distinguish between manual testing and automated testing.
c) Explain, which testcases should be automated.

CODE No.:10BT71007

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

TELEMETRY AND TELECONTROL (ELECTIVE-III)

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Draw the sketch of pneumatic telemetry system and explain. How is the fluid line characterized? What in the important parameter in such a system?

2. a) With a neat sketch, explain the operation of a Pulse Duration System.
b) Explain about intersymbol interference.

3. What is Frequency Division Multiplexing? Draw the Transmitting end and Receiving end block diagrams for FDM and explain.

4. Discuss in detail about:
a) QAM
b) Protocols.

5. Discuss briefly about digital transmission systems in satellite telemetry.

6. What is the multimode graded index fiber and explain about it with necessary figures and equations?

7. Which type of Telecontrol method is used for remote transmission of continuous, varying numerical values? Explain rectifier, resistance and *dc* compensation analog methods for the local control area.

8. List out and briefly explain the environmental and interface conditions of Telecontrol apparatus.

CODE No.:10BT71202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

MOBILE COMPUTING (ELECTIVE-III)

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List and explain the constraints of mobile devices.
b) What are bearer services? Data with forward error correction (FEC) is transmitted through a channel at the rate of 15 kbps. If redundant data inserted is four times more than the original data, calculate the rate at which receiver actually receives the retrieved data.

2. a) Explain hidden and exposed terminal, near and far terminal problem.
b) Explain Code Division Multiple Access mechanism.

3. With a neat sketch, explain the protocol architecture of HiperLAN.

4. a) Explain Dynamic Host Configuration Protocol.
b) Mention the advantages and disadvantages of snooping TCP.

5. a) Describe the four states used in cache invalidation mechanism.
b) What are the different recovery models used in data recovery processes in mobile database systems?

6. Explain push based and pull based mechanisms.

7. a) Explain how Dynamic topology is realized in MANETs.
b) What is Least Interference Routing? Explain.

8. Explain Wireless Application Protocol.

CODE No.:10BT71301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

NEURAL NETWORKS AND FUZZY SYSTEMS (ELECTIVE-III)

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Compare biological and artificial neural networks.
b) Explain supervised, unsupervised and reinforced learning.

2. a) Illustrate the steps involved in Hopfield network algorithm.
b) What is back propagation?

3. a) Explain the Hopfield network algorithm and its limitations.
b) Explain the energy analysis of Discrete Hopfield Network.

4. a) Write short notes on types of bi-directional associative memory network.
b) Explain in detail about ART2.

5. a) Explain Max-Min Composition with example.
b) Explain fuzzy properties related to Intersection.

6. Show that any λ - cut relation (for $\lambda > 0$) of a fuzzy tolerance relation results in a crisp tolerance relation.

7. a) Explain simple Fuzzy Logic Control design.
b) What are the assumptions in Fuzzy Control System design?

8. a) Explain how ANN is used for load forecasting.
b) Explain how fuzzy logic is used for DC Motor speed control.

CODE No.:10BT80102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

ADVANCED FOUNDATION ENGINEERING (ELECTIVE - III)

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Differentiate between the Mayerhoff's and Terzaghi's Bearing Capacity theories.
b) A foundation 1.5x1.0m is located at a depth of 1m in a stronger clay layer. The thickness top stronger clay layer is 2m with undrained shear strength of 120kN/m² and unit weight of 16kN/m³ and this is followed by softer clay layer with undrained shear strength of 48kN/m² and unit weight of 14kN/m³. Determine the gross allowable load for the foundation by taking a factor of safety of 3. (Take ca/c1=0.9 for c2/c1=0.4).

2. a) What are different types of foundations? Explain with the help of sketches.
b) Design a square reinforced concrete footing for the following data:
Column load=800 *kN*
Allowable soil pressure = 200 kN/m^2
Size of column = 0.4 *m* × 0.4 *m*.

3. a) How do you estimate the bearing capacity of group of piles in sand and clay?
b) A square pile group of 16 piles is placed through a filled up soil of 3 m depth. The pile diameter is 250 mm and pile spacing is 750 mm. If unit cohesion of the soil is 18 kN/m² and unit weight is 15 kN/m³, compute the negative skin friction of the group.

4. a) What do you understand by grip length? *Discuss* the characteristics of different shapes of wells.
b) A circular well of 6 *m* external diameter and 4 *m* internal diameter is embedded to a depth of 14*m* below the maximum scour level in a sandy soil deposit. The well is subjected to a horizontal force of 820 *kN* acting at a height of 8*m* above the scour level. Determine the allowable total equivalent resisting force due to earth pressure, assuming (i) the rotation is about a point above the base, (ii) the rotation is at the base.

Use *Terzaghi's analysis*. Take $\gamma_{sat}=12kN/m^3$, $\phi=30°$ and F.S. for passive resistance = 2.0.

5. a) Draw different types of apparent pressure diagrams used in the design of braced cuts.
b) A cantilever sheet pile retains soil to a height of 6 m. Find the depth to which the pile should be driven assuming two-thirds of the theoretical passive resistance is developed on the embedded length. γ = 19 kN/m³ and $\varphi = 30^o$. Use approximate method.

6. a) How to classify the expansive soils? Discuss on preventive measures.
b) What are the foundation problems associated with black cotton soils? Describe the lime column technique to improve the characteristics of black cotton soil.

7. a) State the advantages and disadvantages of under-reamed piles.
b) Explain the procedure to estimate the load carrying capacity of double under-reamed pile using static formula.

8. a) Write a short note on "ship impact".
b) Design a mound type breakwater for the following data:
Depth of water = 16 *m*; wind velocity = 130 *km/hr*; fetch of wave = 220 *km*.
Consider K=0.015, γ_r=24 kN/m^3, γ_w=10.2 kN/m^3, S_r=2.74 and K_Δ=3.2.

CODE No.:10BT80108

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

GROUNDWATER DEVELOPMENT AND MANAGEMENT (ELECTIVE - IV)

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain different types of aquifers with neat sketches.
b) Define the terms
i) Porosity ii) Permeability iii) Specific Yield iv) Specific Retention

2. a) State and explain Darcy's law. What are its limitations?
b) Distinguish between 'Ground surface contours' and 'Water table contours'. Explain how the water table contours are prepared.

3. a) Derive the equation for steady state discharge from a well in an unconfined aquifer. State clearly all the assumptions included in the derivation.
b) The discharge from a fully penetrating well operating under steady state in a confined aquifer of 30m. Thickness is 2100 litres/minute. The drawdowns observed at two observations wells located at 15m and 150m from the well are 3.2m and 0.28m respectively. Determine the transmissibility and the permeability of the aquifer.

4. a) Derive Dupuit's equation for steady radial flow to a well in confined aquifer with listing all assumptions and diagrams.
b) Explain the method of Recovery test in unconfined aquifer. Calculate the 'T' when the Q = 1150 m^3/day and Δs = 0.40m.

5. a) Briefly explain the surface methods of geophysical investigation.
b) Explain the difference between geophysical logging and resistivity logging.

6. a) What are the different "artificial recharge methods"? Bring out their relative merits.
b) Explain the applications of GIS and RS in artificial recharge of groundwater.

7. a) Enlist the causes for salt water intrusion and explain how would you locate interface between salt water and fresh water.
b) Briefly write about various types of remedial measures to contain salt water intrusion.

8. a) Describe the role of conjunctive use in water resource management.
b) What is over draft and explain how the over draft is related to land subsidence?

CODE No.:10BT80202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

DISTRIBUTION OF ELECTRICAL POWER (ELECTIVE-IV)

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the need for distribution automation.
b) Explain the various classifications of loads with their characteristics in detailed.

2. Explain the types of primary feeders and discuss the merits and demerits of them.

3. a) Derive the expression for voltage drop and power loss for non-uniformly radial type distribution load.
b) A 1-φ feeder circuit has total impedance $(0.5 + j0.2)\Omega$, $V_r = 230V$ and $I_r = 5\angle -30^o$, determine
i) p.f. of load
ii) load p.f. for which impedance angle is maximum and
iii) derive the expression for load p.f. for which the drop is maximum.

4. a) What are the different protective devices used in distribution system? Give comparison between them.
b) What are the common faults in a single phase 2-wire and 3-wire system? Explain how faults current is computed with proper single line diagrams.

5. a) How do you determine the best capacitor location? Explain.
b) Compare and explain the role of shunt and series capacitors in power factor correction.

6. a) Write short notes on the role of AVB on voltage control.
b) Explain the line drop compensation on voltage control.

7. a) Explain the significance of load forecasting in planning a distribution system.
b) Explain the various factors affecting the distribution system planning.

8. a) Explain the need for Distribution Automation.
b) Enlist the objectives of Distribution Automation.

CODE No.:10BT80401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

CELLULAR AND MOBILE COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe voice quality and service quality issues in a cellular system.
b) Describe basic cellular system.

2. a) Derive the co-channel interference factor for k=7 cell reuse pattern.
b) Discuss cell splitting issues.

3. a) Define Umbrella Pattern. What are the benefits of Umbrella Pattern?
b) Explain how interference can be reduced by using parasitic elements.

4. a) What antenna is used for interference reduction and explain in detail?
b) Explain the concept set-up channels related to frequency management of cellular system.

5. a) Derive the Free space path loss formula for the received power in terms of field strength (dBμV).
b) Compare Space Diversity and Frequency Diversity and what are the advantages of Space Diversity in mobile communications.

6. a) Explain space diversity antennas.
b) Discuss non-fixed channel assignment algorithms.

7. a) Why are Handoff's needed and explain various types of Handoff's.
b) What are dropped calls and how they can be reduced?

8. Write short notes on the following
a) Code Division Multiple Access Scheme.
b) Basics of 3G Cellular System.

CODE No.:10BT80402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

WIRELESS COMMUNICATIONS & NETWORKS (ELECTIVE -III)

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write a short note on CSMA protocols.
b) Draw the neat circuit diagram of TDMA architecture.

2. a) Draw and explain the SS7 user part.
b) Explain ARDIS.

3. a) Write the notes on cellular digital packet data.
b) What are the services offered by the SS7 network?

4. a) Explain Briefly about IEEE 802 and extend it to different protocols.
b) Write a short note on Microwave LANS.

5. a) Explain the user part of Bluetooth authentication procedure.
b) Explain the Bluetooth network topology.

6. a) Explain the use of logical channels to carry different types of payload traffic in Bluetooth.
b) Explain about the logical link protocol.

7. a) Explain the channel access of data-oriented CDPD network.
b) Write about GPRS and higher Data Rates.

8. a) Explain the need of Wireless ATM and write its Services.
b) Write about Wi-Fi and mention Applications.

CODE No.:10BT80406

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

SATELLITE COMMUNICATIONS (ELECTIVE -IV)

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the advantages of satellite communications?
b) Draw the block diagrammatic representation of satellite communication system and explain each block.

2. a) Explain the following
i) Solar Eclipse
ii) Sun Transit Outage.
b) How to locate the satellite in the orbit?

3. a) Explain about the types of antenna used in satellite communications.
b) Explain redundancy and reliability with respect to satellite communication system.

4. a) Derive an expression for the power received by earth station from satellite transmitter and also for carrier to noise ratio at the demodulator of the receiver.
b) Discuss about c-band downlink budget in satellite communications in clean air and in rain, atmospheric conditions.

5. a) Draw the block diagram of direct sequence spread spectrum and explain it briefly.
b) Distinguish between TDMA and FDMA.

6. a) Explain about antenna system and various tracking system in an earth station.
b) Describe about interconnection satellite communication with data terminating equipments and with data networks.

7. a) Explain about delay, throughput system considerations of LEO satellite system.
b) Discuss in detail about the operational NGSO constellation designs.

8. a) Explain the principle of GPS and discuss GPS C/A accuracy.
b) With neat functional block diagram describe about the GPS receiver operation.

CODE No.:10BT80502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

HUMAN COMPUTER INTERACTION (ELECTIVE -III)

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Define User Interface and explain the brief history of Screen design.

2. a) Discuss the General Principles of the User Interface Design.
b) Explain the Characteristics of a Web Interface.

3. a) Explain the important human characteristics in UI design.
b) Mention the steps involved in setting up focus group.

4. List the qualities for providing visually pleasing composition. Explain each in detail with suitable examples.

5. a) Define Menu. Explain different structures and functions of Menus in detail.
b) Describe about text entry/ read only controls.

6. a) Discuss the general guidelines for choosing the proper words and writing clear messages and text.
b) What are the kinds of Icons? Explain the characteristics of Icons.

7. Give a brief note on:
i) Interface mockup tools
ii) Transition diagrams with suitable examples

8. a) Describe about speech recognition and generation in detail.
b) Describe different types of image and video displays in detail.

CODE No.:10BT80504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

CLOUD COMPUTING (ELECTIVE -IV)

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What infrastructure is required for supporting cloud?
b) What are the services for which cloud can be used?

2. a) How Grid computing is related to Cloud computing. What is the status of Grid and Cloud computing?
b) Cloud provides on demand services. Justify.

3. Enlist and explain various service model and deployment models of Cloud computing.

4. Explain different Cloud computing architectures and their differences.

5. a) With the case study from Amazon EC2, list out the cloud solutions provided to the customers by suitable examples.
b) How can we integrate High-Performance Computing into the VCL Cloud Architecture and give any two components in SwinDeW-C?

6. a) Compare common external audit approaches (SAS70, SysTrust, ISO27001) in cloud computing.
b) Analyze the need of Virtual Machine instead of Dual boot.

7. a) Highlight the features of **SaaS** and how to use Google/Yahoo as a Service with suitable source code.
b) Explain the Web Service layered Architecture and how Amazon EC2 provides (**IaaS**) Infrastructure as a Service via SOAP/REST API's.

8. Explain Google App Engine.

CODE No.:10BT81001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

INDUSTRIAL ELECTRONICS

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the principle of operation of a Darlington emitter follower circuit and derive its gain.
b) Draw the circuit diagram of a Cascode transistor amplifier and explain its working.

2. a) Define voltage regulator and write a brief note on functions performed by voltage regulator.
b) Explain the block diagram of a series voltage regulator.
c) Define regulation factor.

3. a) Explain volt-ampere characteristics of SCR by neatly representing the conduction region, forward blocking region and reverse blocking region.
b) Discuss the features of SCR.
c) Define holding current with respect to SCR.

4. a) What is meant by commutation of an inverter?
b) What are the typical uses and requirements of a practical inverter?

5. a) Define cycloconverter. What are the two basic types of cycloconverters? Differentiate them.
b) Explain three phase half wave cycloconverters in detail.

6. a) Explain briefly about switching sequence in 4-phase stepping motor.
b) List out the various characteristics of data processing unit.

7. a) With neat diagrams, explain any one of the timer which is classified according to the techniques used to achieve the industrial timing.
b) Explain about the timers using R-C elements.

8. a) Discuss the various sources of thermal losses in dielectric heating.
b) With the help of circuit diagram, describe the method of production of ultrasonic waves using piezo-electric effect.

CODE No.:10BT81201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

SERVICE ORIENTED ARCHITECTURE (ELECTIVE -III)

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Does contemporary SOA emphasize extensibility? Justify your answer.
b) How SOA is reshaping XML and web services? Explain.

2. Explain the concept of orchestration and choreography by providing an appropriate example related to business process.

3. a) Describe WS-Eventing specification.
b) Write about policies.

4. What are the basic MEPs supported by WSDL? What is coordination? Explain the services involved in it.

5. a) Describe the SOA delivery life cycle phases.
b) Discuss the problems solved by service layers.

6. Write about service modelling guidelines.

7. Explain service-oriented design in detail.

8. Discuss WS-Security Language in detail.

CODE No.:10BT81503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

GRID COMPUTING (ELECTIVE -IV)

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is business on demand?
b) Define Grid Resource Brokers.
c) Define Grid Security Infrastructure (**GSI**).

2. a) What are the core objects defined by Legion system?
b) Name the components available in **Nimrod** architecture.
c) What are the scheduling algorithms used in **Nimrod_G**?

3. Explain some of the grid application and their usage patterns.

4. a) Elaborate of Web Service Architecture with the help of a block diagram.
b) Discuss, Global XML Architecture (**GXA**) and dependencies.

5. a) Summarize National Fusion Collaboratory (**NFC**) referring to Customers (Actors) and Scenarios.
b) What are the most notable basic services of **OGSA**? Mention how the **OGSA** infrastructure supports these.

6. Discuss in detail Technical details of **OSGI** specification.

7. Explain briefly about Common Management Model (**CMM**).

8. Explain in detail about Acme search service implementation in top down approach.

CODE No.:10BT82301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

ANIMAL CELL SCIENCE AND TECHNOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Write detailed note on
   a) Structure of Prokaryotic cell.
   b) Structure of Eukaryotic cell.

2. Write notes on
   a) Balanced salt solutions
   b) Growth media

3. Write detailed essay on Physico chemical properties of Media components.

4. Explain the commonly used animal cell lines, their origin and characteristics.

5. Comment on
   a) Cell cloning
   b) Micro manipulation and cell transformation

6. Discuss the various steps involved in somatic cell fusion. Write short notes on its application.

7. Write detailed note on Apoptosis and its mechanism in eliminating dead cells.

8. Write an essay on tissue engineering.

CODE No.:10BT82304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

FOOD SCIENCE AND TECHNOLOGY (ELECTIVE - III)

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Give an account of Malnutrition in India.

2. Define water activity. Explain the role of water activity in the shelf life of foods.

3. Classify the microorganisms. Enlist and explain the most commonly invading micro organisms in the food products.

4. Describe the chemical and biological methods of food preservation.

5. Discuss in detail about the types and role of starters in fermented foods.

6. What are the different types of sampling techniques we use in the analysis of food materials? Explain.

7. Define food packaging. Explain in details the types and properties of food packaging materials.

8. What is quality control of foods? Explain about different methods for quality control of fruits and vegetables.

CODE No.:10BT82307

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2014

METABOLIC ENGINEERING (ELECTIVE - IV)

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. What is metabolic engineering? Discus different models of cellular reactions.

2. What are the mechanisms for regulation of biosynthesis of amino acids at the whole cell level?

3. Write an essay on the applications of secondary metabolites.

4. a) Write about product inhibition.
   b) Write about Mixed or Sequential Bioconversions.

5. Describe the metabolic pathway manipulations to improve fermentation.

6. Elaborate the role of Thermodynamics in Cellular Processes.

7. Discuss the algorithms of synthetic metabolic pathways.

8. Discuss the applications of metabolic engineering in bioremediation processes.

CODE No.:10MC1HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

ACCOUNTING AND FINANCIAL MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Distinguish between Book-Keeping and Accounting. Explain the accounting concepts and accounting conventions in detail.

2. From the following details of Mrs. Roshan & Co., you are required to prepare Trading, Profit and Loss Account and the Balance Sheet for the year ended 31st Dec, 2009.

Particulars	Rs.	Particulars	Rs.
Sales	65,000	Discount Allowed	100
Sales Returns	500	Discount Received	500
Stock at the beginning	8,000	Salaries	3,000
Purchases	29,000	Interest paid	400
Purchase Returns	300	Furniture	3,000
Direct Wages	5,000	Buildings	20,000
Direct Expenses	5,000	Plant and machinery	20,000
Carriage inwards	4,000	Cash in Hand	1000
Capital at the beginning	30,000	Bills payable	6,200
Drawings	5,000	Reserve for Bad and Doubtful Debts	500
Sundry Debtors	10,000	Bad debts	300
Sundry Creditors	12,000	Closing stock at the end	8,000

Additional Information:
1. Provision for Bad and Doubtful Debts at 10% on Debtors.
2. Prepaid interest Rs. 100
3. Outstanding Salaries Rs. 500
4. Interest on capital at 10% p.a.
5. Depreciate plant and machinery at 10% p.a. and Building at 5% p.a.

3. Discuss the application of ratio analysis in the interpretation of financial statements and financial analysis. What are the limitations?

4. What is over capitalization? Explain its causes and effects.

5. Discuss the Scope, Role and Objectives of Financial Management.

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. What is meant by Leverage? Explain the concepts Operating Leverage, Financial Leverage, Combined Leverage.

8. A choice in 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 February - 2014

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) Surplus b) Benevolent
ii) Write the synonyms for the following words.
a) sly b) trickster
iii) Give one word substitution for the following.
a) A tyrannical leader.
b) That which can be easily stretched.
iv) Use the following idioms and phrases in sentences to make the meanings clear.
a) A feather in the cap.
b) Satan quoting the scriptures.
v) Rewrite the sentences using the correct homophones from the given options:
a) The entire word is striving for _____ (piece/peace).
b) Goodness is the _____ (sum/some) total of human life.
vi) Write a sentence using the correct homographs.
a) Bank b) Bank

3. Define listening skills. Describe different types of listening skills.

4. Trace the different types of listening.

5. Write short notes on
(a) Skimming
(b) Scanning

6. The Table shows sales of a small car in different regions of the country in 2004 and 2005.

Region	2004	2005
North	3000	6000
South	5020	5500
East	550	550
West	10001	9000

Analyse the data given above and write a report.

7. a) What is a Technical Report? What are the components of a good technical report?
b) Write short notes on
(i) SMS (ii) E-mail.

8. a) Discuss the elements of a successful presentation giving examples.
b) Define the purpose and characteristics of a job interview.

CODE No.:10MC10101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

DISCRETE MATHEMATICAL STRUCTURES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Construct the truth table for the following:
$((P \vee Q) \wedge R) \leftrightarrow (Q \rightarrow R)$.
b) Show that $(x)(P(x) \vee Q(x)) \Rightarrow (x)P(x) \vee (\exists x)Q(x)$.

2. a) Show that $P \vee Q$ is tautologically implied by $(S \vee R) \wedge (R \rightarrow P) \wedge (S \rightarrow Q)$.
b) Show that from
i) $(\exists x)(F(x) \wedge S(x)) \rightarrow (y)(M(y) \rightarrow W(y))$
ii) $(\exists y)(M(y) \wedge \neg W(y))$
the conclusion $(x)(F(x) \rightarrow \neg S(x))$ follows.

3. (a) Define equivalence relation let X={1,2,3,4,5,6,7} and
R = {(x,y)|x-y is divisible by 3}.

Show that R is an equivalence relation. Draw the graph of R.

(b) Define primitive recursive function. Show that the function f(x,y)=x+y is primitive recursive.

4. (a) Define monoid and submonoid. Prove that for any commutative monoid(M,*),the set of idempotent elements of M forms a submonoid.
(b) if f:G→H and g:H→K are homomorphisms, then prove that gof:G→K defined by(gof)(x)=g{f(x)} is a homomorphism.

5. (a) Prove that for all $\mathbf{n \geq 2}$, $\mathbf{2^{n-1}(3^n + 4^n) > 7^n}$.
(b) How many binary sequences are there of length 15.

6. a) Express the recurrence formula $b_n = 3b_{n-1} + 1$, $b_1 = 7$ in explicit formula.
b) Solve the recurrence relation $a_n - 7a_{n-1} + 10a_{n-2} = 0$, for $n \geq 2$ using generating function.

7. (a) Define a graph. Explain different ways of representing a graph.
(b) State and prove the Euler's formula for planar graphs.

8. (a) Prove that a tree with n vertices has n-1 edges.
(b) Write BFS and DFS algorithms of a graph.

CODE No.:10MC10102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

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 is an algorithm? Write an algorithm for finding the minimum and maximum values in a given list of numbers.
b) Explain about basic data types of C languages. What are mixed expressions and what rules are followed for evaluating such expressions?

2. a) Compare and contrast various loop statements in C language.
b) Describe the importance of Break, Continue and Goto statements with examples.

3. a) Write a program for sorting a given list of names.
b) Write a program for multiplication of a matrix by a vector.

4. a) What is the difference between near and far pointers? Give declarations for single, double and multiple pointers.
b) What is a dangling pointer? What are the problems with pointers?

5. a) Define a function? Explain the advantages of using functions.
b) Write a C program to generate Fibonacci number.

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) Discuss the following with help of Syntax
(i) Open () (ii) Close (iii) write (iv) Seek (v) Sequential access
(vi) random access.
b) Write short notes on the following.
(i) Preprocessor directive statement (ii) Command line arguments.

8. a) Explain about basic text I/O functions.
b) write a simple program to implement text window function.

CODE No.:10MC10103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

DATA STRUCTURES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. (a) What are the different mathematical notations used for algorithm analysis?
(b) Discuss the components for the space needed by a program.

2. a) What is a stack? Discuss the implementation of a stack using arrays.
b) How is recursion implemented using a stack?

3. (a) Write an algorithm to perform enqueue and dequeue operations on a circular queue.
(b) Explain FCFS CPU Scheduling algorithm with an example.

4. (a) Write an algorithm to insert and delete elements in a circular linked list.
(b) What is a Sparse Matrix? Explain about the linear list representation of a sparse matrix.

5. a) What is sorting? Explain bubble sort with the help of an example.
b) Explain Binary search using a suitable example and write its time complexities.

6. a) Is the operation of deletion "commutative" in the sense that deleting *X* and then *Y* from a Binary Search Tree leaves the same tree as deleting *Y* and then *X*? Argue why it is or give a counter example.
b) Show that if a node in a Binary Search Tree has two children, then its successor has no left child and its predecessor has no right child.

7. (a) Define a Red-Black tree? Write the procedures to perform insertion, deletion in a Red-Black tree.
(b) Construct a heap for the list 1,8,6,5,3,7,4 by successive key insertions (top-down algorithm).

8. (a) Illustrate graph representations with the help of an example.
(b) Explain the Prim's algorithm for minimum cost spanning tree.

CODE No.:10MC1HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Supplementary Examinations August - 2014

ACCOUNTING AND FINANCIAL MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Give five examples of economic decisions that are based on accounting information. Discuss the advantage of computerized accounting system.

2. The following is the Trail Balance of Santhosh on 31st March 2010.

	Debit Rs.	**Credit Rs.**
Cash in Hand	10,800	
Cash at Bank	52,600	
Purchases	8,13,500	
Sales		19,75,600
Returns inwards	13,600	
Returns outwards		10,000
Wages	2,09,600	
Fuel and power	94,600	
Carriage on sales		64,000
Carriage on purchase	40,800	
Sock (01-04-2009)	1,15,200	
Freehold land	2,00,000	
Machinery	4,00,000	
Salaries	3,00,000	
Patents	1,50,000	
General expenses		60,000
Insurance	12,000	
Capital		14,20,000
Drawings	1,04,900	
Sundry debtors	2,90,000	
Sundry Creditors	_____	1,26,000
	35,31,600	**35,31,600**

a. Stock on hand on 31st March 2010 is Rs 1,36,000.
b. Machinery is to be depreciated at the rate of 10% and patents at the rate of 20%.
c. Salaries for the month of March 2010 amount to Rs. 30,000 were unpaid.
d. Insurance includes a premium of Rs 1700 for the next year.
e. Wages include a sum of Rs. 40,000 spent on the erection of cycle-shed for employees and customers.
f. A provision for bad and doubtful debts is to created to the extent of 5% on sundry debtors.

3. From the following figures, calculate Debt Equity Ratio:

	Rs.
Preference share capital	1,50,000
Equity share capital	5,50,000
Capital Reserve	2,00,000
Profit and Loss Account	1,00,000
6% Debenture	2,50,000
Sundry Creditors	1,20,000
Bills payable	60,000
Provision for taxation	90,000
Outstanding Creditors	80,000

4. In what respect is the objective of wealth maximization superior to the Profit maximization objective?

5. Balance sheets of M/S X and Y as on 01.01.2008 and 31.12.2008 were as follows:

Liabilities	01.01.2008	31.12.2008	Assets	01.01.2008	31.12.2008
Creditors	40,000	44,000	Cash	10,000	7,000
Mrs. X Loan	25,000	-	Debtors	30,000	50,000
Loan from bank	40,000	50,000	Stock	35,000	25,000
Capital	1,25,000	1,53,000	Machinery	80,000	55,000
			Land	40,000	50,000
			Building	35,000	60,000
	2,30,000	**2,47,000**		**2,30,000**	**2,47,000**

During the year a machine costing Rs. 10,000 (accumulated depreciation Rs. 3000) was sold for Rs. 5,000. The provision for depreciation against machinery as on 01.01.2008 was Rs. 25,000 and on 31.12.2008 Rs. 40,000. Net profit for the year 2008 amounted to Rs. 45,000. You are required to prepare Cash Flow Statement.

6. What is CVP analysis? Discuss its Managerial uses and limitations.

7. Describe the need and determinants of working capital for manufacturing concern.

8. The life of a machine which costs Rs.1,20,000 is estimated 5 years. It's salvage value is estimated Rs. 20,000 at the end of 5th year. The earnings after taxes were estimated as given below:

Year	**Rs.**
1	10,000
2	90,000
3	80,000
4	70,000
5	60,000

Calculate Average Return on investment

CODE No.:10MC10102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Supplementary Examinations August - 2014

PROGRAMMING THROUGH C

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Classify various tokens in C and explain them.
b) Discuss about various formatted I/O statements in C.

2. a) Differentiate between two way selection and multi way selection and write a brief note on various selection statements under each category.
b) Write a C program to generate Fibonacci series using for loop.

3. a) Differentiate between one dimensional, two dimensional and multi dimensional arrays. How to store array of strings? Explain.
b) Write a C program to print the string in reverse order.

4. a) What is a Pointer? How to declare and initialize a pointer? What are the advantages of pointers?
b) Explain: Free pointer, Dangling pointer and Generic pointer.

5. a) What are main differences between system define functions and user-defined functions?
b) Discuss with examples of the concepts auto, extern, static and void qualifiers in C.

6. a) Give the syntax and usage of nested structures with suitable examples.
b) Using structures, write a program for addition and subtraction of two distance values given in terms of feet and inches.

7. a) What are different modes of opening a file? Explain with example statements.
b) Write a program to copy one file to another whose names are given as command line arguments.

8. a) Explain Screen manipulation functions.
b) Write a simple program to implement Graphics function.

CODE No.:10MC2BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Regular/Supplementary Examinations August - 2014

PROBABILITY AND STATISTICS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove Addition theorem of probability.
b) Of three men, the chances that a politician, a business man or an academician will be appointed as a vice-chancellor (V.C) of a University are 0.5, 0.3, 0.2 respectively. Probability that research is promoted by these persons if they are appointed as V.C is 0.3, 0.7, 0.8 respectively.
(i) Determine the probability that research is promoted.
(ii) If research is promoted, what is the probability that V.C is an academician?

2. a) Explain the concept of mathematical expectation of a random variable. State addition and multiplication theorems on mathematical expectation.
b) A continuous random variable X has a probability density function

$$f(x) = 3x^2,\ 0 \le x \le 1$$
$$= 0, \text{ otherwise.}$$

Find K such that $P(X \le K) = P(X > K)$.

3. a) In a large consignment of electric bulbs 10% are defective. A random sample of 20 is taken for inspection. Find the probability that
(i) All are good bulbs.
(ii) Almost there are three defective bulbs.
(iii) Exactly there are three defective bulbs.
b) If X is normally distributed with mean 6 and S.D=2;
find (i) $P(0<x<12)$ (ii) $P(X<10)$ (iii) $P(X \ge 10)$.

4. a) Define Point Estimation and Interval Estimation.
b) If the population is 3, 6, 9, 15, 27
(i) List all possible samples of size 3 that can be taken without replacement from the finite population.
(ii) Calculate the mean of each of the sampling distribution of means.
(iii) Find the standard deviation of sampling distribution of means.

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. a) Pumpkins were grown under two experimental conditions. Two random samples of 11 and 9 pumpkins. Show the sample standard deviations of their weights as 0.8 and 0.5 respectively. Assuming that the weight distributions are normal, test hypothesis that the true variances are equal.
A die is thrown 264 times with the following results. Show that the die is biased.

No. of appeared on the die	1	2	3	4	5	6
Frequency	40	32	28	58	54	60

7. a) Distinguish between Correlation and Regression analysis.

b) Find the rank correlation coefficient from the following data which relates the ranking of 10 students in two subjects Statistics and Computer Science.

Statistics:	3	4	1	7	9	2	10	5	8	6
Computer Science:	4	2	6	1	7	5	3	10	9	8

8. a) Explain the clearly the construction and function of (i) X - chart and (ii) C - chart.

b) Draw the mean and range charts from the following data and state your conclusion.

Sample No.	1	2	3	4	5	6	7	8	9	10	Total
Sample Mean	12.8	13.1	13.5	12.9	13.2	14.1	12.1	15.5	13.9	14.2	135.3
Sample Range	2.1	3.1	3.9	2.1	1.9	3.0	2.5	2.8	2.5	2.0	25.9

(Given n = 5, $A_2 = 0.577$, $D_3 = 0$, $D_4 = 2.115$)

CODE No.:10MC20101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Regular/Supplementary Examinations August - 2014

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) =∑(0,1,2,5,8,9,10) and also draw the appropriate logic diagrams for that function.

2. Discuss different addressing modes and their usage in instruction.

3. Discuss in detail about instruction formats.

4. Explain Flynn's classification of Computer Architecture. Give an example for each.

5. Define cache memory? Explain different mapping procedures in the organization of cache memory with suitable example.

6. Explain the design of control unit in detail.

7. Explain DMA mechanism. How will it improves the speed of bulk transfer between I/O and memory?

8. a) Explain direct mapped cache organization.
b) Explain processor level parallelism with example.

CODE No.:10MC20102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Regular/Supplementary Examinations August - 2014

OPERATING SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the activities involved in connection with process management and memory management for which OS is responsible?
b) Define the essential differences between the following types of operating systems:
i) Batch ii) Time sharing iii) Distributed.

2. Explain about various File Directory structures.

3. a) What is meant by CPU scheduling? Discuss any Two preemptive and non preemptive CPU scheduling algorithms with suitable examples.
b) Explain process life cycle and states involved in it.

4. a) What is a critical section problem? Suggest a classic software based solution.
b) What is the Readers-writers problems? How semaphores be useful for the solution?

5. What is a deadlock? Explain the mechanisms for preventing Deadlock.

6. a) Draw and explain steps in handling a page fault in demand paging.
b) What is thrashing?

7. Discuss about various Program Threats.

8. Explain in detail about OS faults, failures and Fault recovery,

CODE No.:10MC20103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Regular/Supplementary Examinations August - 2014

OBJECT ORIENTED PROGRAMMING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the Object Oriented Programming principles? Explain these in the context of Java language.
b) Explain about the all types of operators available in Java language. Also explain about jump statements.

2. a) Define a Java class for Stack, which can grow dynamically as more number of elements are pushed onto the stack. Provide methods for standard stack operations.
b) What is the use of *finalize()* method? Explain about the garbage collection process of Java runtime system.

3. a) Write a Java program for sorting of strings. Assume that the input strings are available in an initialized array.
b) What is the difference between overloading and overriding a method? Give an example.

4. a) Why the package feature is required? How package names are related to the file system directories?
b) Give the syntax of an interface.
c) Explain about the functionality of Date class.

5. a) Define exception and explain the different types of exceptions.
b) Explain about the concept of multithreading.

6. a) Give the hierarchy of I/O classes of Java language.
b) Write a program to display the entries of a given directory along with their type (file/dir) and size.

7. a) Explain the border and Grid layout managers with an example each.
b) Explain Applet Life Cycle methods.

8. a) Write a Java program to create a feedback form containing appropriate fields and buttons using Swing classes.
b) Give a sample Applet code to draw any four objects (lines, rectangles etc.).

CODE No.:10MC20104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Regular/Supplementary Examinations August - 2014

DATABASE MANAGEMENT SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is a data model? Explain different categories of a data model.
b) List the different types of database system users.

2. a) Explain about Entity Integrity, Referential Integrity and Foreign keys.
b) Define the concept of aggregation. Give an example of where this concept is useful.

3. a) Explain correlated nested queries with an example.
b) Explain GROUP BY and HAVING clauses with examples.

4. a) Explain with example the various iterative loops present in PL/SQL.
b) Give brief description about the named and un-named exceptions present in PL/SQL.

5. a) Define BCNF. Explain with an example, how BCNF differs from 3NF.
b) Explain Armstrong's axioms theorem in closure of a set of FD's.

6. a) Explain different properties of transactions to maintain data consistency and system failures in DBMS.
b) What are the different phases in ARIES recovery algorithm?

7. a) Define a deadlock and explain how we can prevent the deadlocks.
b) Explain with an example, the various operations that can be performed on sorted files.

8. a) What is the difference between a clustered index and an unclustered index?
b) What is a composite search key? What are the pros and cons of composite search keys?

CODE No.:10MC2BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Supplementary Examinations March - 2014

PROBABILITY AND STATISTICS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) If $A_1, A_2 \ldots\ldots\ldots\ldots A_n$ are n events then prove that

$$P\left(\bigcap_{i=1}^{n} A_i\right) \geq \sum_{i=1}^{n} P(A_i) - (n-1)$$

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) Define Probability distribution function and write the properties of Distribution function.

b) A function $f(x)$ is defined as follows:

$$f(x) = \begin{cases} 0, & x < 2 \\ \frac{1}{18}(2x+3), & 2 \leq x \leq 4 \\ 0, & x > 4 \end{cases}$$

Show that it is a probability density function. Find the probability that a variate having this density will fall in the interval $2 \leq x \leq 3$.

3. a) Obtain the mean and variance of Binomial distribution.

b) What is Normal distribution? Give it's importance.

4. a) A random sample of 100 teachers in a large metropolitan area revealed a mean weekly salary of Rs 487 with a standard deviation Rs 48. With what degree of confidence can we assert that the average weekly salary of all teachers in the metropolitan area is between 472 to 502 ?

b) A normal population has a mean of 0.1 and standard deviation of 2.1. Find the probability that mean of a sample of size 900 will be negative.

5. a) 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. a) Two random samples gave the following data

	size	mean	variance
Sample I	8	9.6	1.2
Sample II	11	16.5	2.5

Can we conclude that the two samples have been drawn from the same normal population?

b) In a pre-poll survey out of 1000 urban voters 540 favoured B and the rest A. Out of 1000 rural voters, 620 favoured A and the rest B. Examine if the nature of the area is related to voting performance using the Chi-square test.

7. Given the following data find the regression of Y on X

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

8. 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.

CODE No.:10MC20101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Supplementary Examinations March - 2014

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) Write short notes on logic gates.
b) Simplify the following Boolean expression in both sum of products form and product of sums form.
F(A,B,C,D) = ∑(0,1,2,5,8,9,10)

2. a) Distinguish between SR, D, JK and T flip-flops.
b) Define multiplexer. Explain 4×1 multiplexer with a neat logic diagram.

3. a) Define the fields that we can found in the instruction format. Explain different instruction formats in detail.
b) Write short notes on RISC.

4. a) Explain memory references instructions in detail.
b) Explain briefly about the design of accumulator logic.

5. a) Explain the virtual memory concept in detail.
b) Compare associative memory, cache memory and virtual memory.

6. Describe BCD adder with block diagram.
Simplify the Boolean Function **F(w,x,y,z) = ∑(1,3,7,11,15)** using don't care conditions with **d(w,x,y,z) = ∑(0,2,5).**

7. a) Differentiate RISC and CISC classification.
b) Explain micro instruction format and field of micro operations decoded.

8. Write short notes for the following
a) Pipelining
b) Message passing multi computers.

CODE No.:10MC20103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Supplementary Examinations March - 2014

OBJECT ORIENTED PROGRAMMING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the primitive Java data types? Explain about the compatibility between the data types.
b) Give different ways of declaring initialized and uninitialized, single dimensional and multi-dimensional arrays of Java language.

2. a) Define a Java class for representing distance in terms of meters and centimeters. Provide necessary constructors and methods for addition and subtraction of distances.
b) Give example code showing different types of nested classes. What is the need of nested classes?

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) Define interface and explain the concept of implementing interface.
b) Define package and explain how to create and access a package.

5. a) Define a user-defined exception class and also write a corresponding handler for that exception.
b) Explain about the life cycle of a thread in a Java program.

6. a) Describe delegation event model.
b) Explain the handling of keyboard events with an example.

7. a) Write about Layout managers and Menus.
b) Explain the relationship between event sources and listeners.

8. a) Write the limitations of AWT components.
b) What is a scroll pane? Explain the usage of JScrollPane class with an example.

CODE No.:10MC20104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Supplementary Examinations March - 2014

DATABASE MANAGEMENT SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Give brief description about database languages.
b) Explain different roles of a database administrator.

2. A company database needs to store information about employees (identi_ed by *ssn*, with *salary* and *phone* as attributes); departments (identi_ed by *dno*, with *dname* and *budget* as attributes); and children of employees (with *name* and *age* as attributes). Employees *work* in departments; each department is *managed by* an employee; a child must be identi_ed uniquely by *name w*hen the parent (who is an employee; assume that only one parent works for the company) is known. We are not interested in information about a child once the parent leaves the company. Draw an ER diagram that captures this information.

3. a) Consider the employee database, where the primary keys are underlined.
Employee (empname, street, city)
Works (empname, companyname, salary)
Company (companyname, city)
Manages (empname, managername)
And given an expression in SQL for the following queries:
(i) Find the names of all employees who work for First Bank Corporation.
(ii) Find the names, street addresses and cities of residence of all employees who work for First Bank Corporation and earn more than 200000 per annum.
(iii) Find the names of all employees in this database who live in the same city as the companies for which they work.
(iv) Find the names of all the employees who earn more than every employees of Small Bank Corporation.
b) Discuss the strengths and weaknesses of the trigger mechanism. Compare triggers with other integrity.

4. a) Explain the environment of PL/SQL in Oracle engine.
b) List out the advantages of PL/SQL.

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 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) Discuss on two-phase locking protocol and timestamp-based protocol.
b) Write short notes on log-based recovery.

8. Explain tree based indexed sequential access method with an example.

CODE No.:10MC3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Regular/Supplementary Examinations March - 2014

OPERATIONS RESEARCH

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain Dual simplex method with a suitable example.

2. Determine an Initial Basic Feasible Solution of the following transportation problem by North-West corner rule.

		To				Capacity
From	3	4	6	8	9	20
	2	10	1	5	8	30
	7	11	20	40	3	15
	2	1	9	14	16	13
Demand	40	6	8	18	6	

3. The following is the cost matrix of assigning 4 professors to 4 key courses. Class preparation time in hours for different topics varies from professor to professor and is given in the table below. Each professor is assigned only one course so as to minimize the total preparation time for all courses.

	Courses			
Professor	C1	C2	C3	C4
A	2	10	9	7
B	15	4	14	8
C	13	14	16	11
D	4	15	13	9

4. With a suitable example, explain the graphical method to solve a two person zero sum game problem.

5. A company has a team of four sales men and there are four districts where the company wants to start its business. After taking into account the capacities of sales men and the nature of districts, the company estimates that the profit per day in rupees for each salesman in each district is given below.

	District			
Salesman	16	10	14	11
	14	11	15	15
	15	15	13	12
	13	12	14	15

Find the assignment of sales men to various district which will yield maximum profit.

6. Explain how you would transform a game problem into a linear programming problem.

7. The demand for an item in a company is 18,000 units per year, and the company can produce the item at a rate of 3,000 per month. The cost of one setup is Rs.500-00 and the holding cost of 1 unit

per month is 15 paisa. The shortage cost of one unit is Rs.20.00 per month. Determine

(i) Optimum production batch quantity and the number of strategies,
(ii) Optimum cycle time and production time,
(iii) Maximum inventory level in the cycle, and
(iv) Total associated cost per year if the cost of the item is Rs.20 per unit.

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 March – 2014

WEB APPLICATION DEVELOPMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Write a Javascript to change text color of HTML elements.

2. Write short notes on XML document type definition and give an example specification for some database.

3. How do you create ResultSet with PreparedStatement object methods?

4. Explain with a necessary illustration the life cycle of a servlet.

5. Give the list of attributes of a page directive of a JSP page and describe the use of those attributes.

6. How to handle the methods and variables using JSP? Explain with an example.

7. Explain the actions and Action Servlet Controller components of Struts framework.

8. Explain about the SOAP Message Structure.

CODE No.:10MC30102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Regular/Supplementary Examinations March - 2014

COMPUTER NETWORKS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What is a Topology? Explain with suitable examples.

2. Explain the Switching methods with suitable diagrams.

3. Explain one-bit sliding window protocol.

4. a) Contrast the differences between Ethernet based networks and Wireless networks.
b) What is meant by Routing? List various Routing algorithms.

5. Explain Remote Procedure call in detail.

6. Write about Domain Name System and Electronic Mail.

7. What is Public Key Cryptography? Explain with example.

8. What is congestion? Explain congestion control.

CODE No.:10MC30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Regular/Supplementary Examinations March - 2014

DATA WAREHOUSING AND DATA MINING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is data mart? Discuss various types of data marts with example.
b) Write the role of OLAP servers in Data Warehouse architecture.
c) Differentiate between ROLAP, MOLAP and HOLAP servers.

2. Explain the role of data manager in data warehousing and also explain its functionality with architecture.

3. a) What is the need for OLAP? Explain.
b) Briefly explain the major issues in data mining.

4. A database has six transactions. Let min-sup = 50% and min-conf = 75%.

	List of items
001	I1,I3,I5,I7
002	I1,I5,I6,I7
003	I6,I7
004	I2,I3,I6,I7
005	I8,I1,I6
006	I2,I5,I8

a) Find all frequent item sets using Apriori algorithm.
b) List all the strong association rules.

5. a) What is “closed frequent itemset”? What are the advantages of closed frequent itemsets?
b) Explain any three techniques for improving the efficiency of Apriori algorithm.

6. Explain the process of classification by back propagation algorithm.

7. Discuss the data mining functionalities applicable to time series data. Quote suitable examples in the discussion.

8. a) Discuss data mining functionalities on videos.
b) Compare text mining with information retrieval systems.

CODE No.:10MC30104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Regular/Supplementary Examinations March - 2014

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 engineering and process? Discuss process patterns, process assessment and improvement.

2. Explain the waterfall model with a neat diagram. Discuss its merits and demerits.

3. Explain the IEEE format of an SRS document with the help of an example.

4. a) What is Software Architecture? Why it is important?
b) Describe about Software Design Concepts.

5. Explain component level design patterns and user interface design patterns.

6. Explain validation testing and system testing.

7. a) Briefly explain the Characteristics of a Good Test.
b) Explain testing methods applicable at class level and also Interclass test case design.

8. a) Explain Software Risks.
b) Describe about Software Reengineering Process Model.

CODE No.:10MC3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Supplementary Examinations August - 2014

OPERATIONS RESEARCH

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Solve the following LPP by Simplex method

Minimize $Z= 5Y_1 +6Y_2$

Subject to the constraints

$-2Y_1 + 5Y_2 \geq 15$

$3Y_1 + Y_2 \geq 12$ and $Y_1, Y_2 \geq 0$

b) Explain the graphical solution with an example.

2. Solve the following transportation problem:

	W1	W2	W3	W4	Factory capacity
F1	19	30	50	10	7
F2	70	30	40	60	9
F3	40	8	70	20	18
Ware house Requirement	5	8	7	14	34

3. A marketing manager has 5 salesmen and 5 districts. Considering the capabilities of the salesmen and the nature of districts, the marketing manager estimates that sales per month (in hundred rupees) for each salesmen in each district would be follows :

Job	Warehouse				
	A	B	C	D	E
1	32	38	40	28	40
2	40	24	28	21	36
3	41	27	33	30	37
4	22	38	41	36	36
5	29	33	40	35	39

Find the assignment of salesman to districts that will result in maximum sales.

4. Solve the following sequencing problem when passing off is not allowed.

Job	Machine Processing time in hours			
	A	B	C	D
I	15	5	4	15
II	12	2	10	12
III	16	3	5	16
IV	17	3	4	17

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. Use dominance property to reduce the following game to 2 x 2 game and hence find the optimal strategies and the value of the game :

	Player B		
	3	- 2	4
Player A	- 1	4	2
	2	2	6

7. Find the sequence that minimizes the total elapsed time required to complete the following tasks:

Task	A	B	C	D	E	F	G	H	I
Time on Machine-I	2	5	4	9	6	8	7	5	4
Time on Machine -II	6	8	7	4	3	9	3	8	11

8. A project consists of a series of tasks labeled A,B, ……H,I with the following relation ships:

A < D, E ; B,D < F ; C < G ; B < H ; F,G < I

Construct the network diagram. Also find the minimum time of completion of the project

Task :	A	B	C	D	E	F	G	H	I
Days :	23	8	20	16	24	18	19	4	10

CODE No.:10MC30101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Supplementary Examinations August - 2014

WEB APPLICATION DEVELOPMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. Mention the uses of CSS. Explain the different types of CSS with suitable examples.

2. How will you declare an attribute and an entity using DTD? Explain them with suitable examples.

3. What are scrollable resultset methods? How do you update resultset programmatically?

4. Give an outline Java servlet code for using a session tracking cookie.

5. Give the list of attributes of a page directive of a JSP page and describe the use of those attributes.

6. What do you mean by directive elements? Explain it with an example.

7. Describe the functionality of **IncludeAction** of struts framework.

8. What is SOAP? What are the elements of SOAP? Explain them in detail.

CODE No.:10MC30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Supplementary Examinations August - 2014

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. Differentiate between operational and informational data stores.

2. a) What is meant by multidimensional view?
b) Discuss in detail about the star schema and fact constellation schema.

3. a) What is the need for OLAP? Explain.
b) Briefly explain the major issues in data mining.

4. Explain various methods for cleaning the data.

5. Discuss about constraint based association mining. Illustrate with an example.

6. What are the methods used to evaluate and increase the accuracy of a classifier?

7. Explain any two partitioning methods for clustering and write the differences between them.

8. Write few data mining applications related to business domain.

CODE No.:10MC30104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Supplementary Examinations August - 2014

SOFTWARE ENGINEERING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. Explain the unique nature of web applications.

2. Explain in detail the Waterfall model. List its advantages and disadvantages.

3. a) Define functional and non-functional requirements.
b) Describe about Requirement Elicitation.

4. Explain software design quality guidelines and attributes.

5. Explain Pattern-Based software design.

6. What are the generic characteristics of Software Testing Strategies? And explain test strategies for Conventional Software.

7. Explain White-Box testing in detail.

8. Write short note on:
a) Risk identification.
b) Software Configuration Management.
c) Reverse Engineering and Forward Engineering.

CODE No.:10MC4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Regular/Supplementary Examinations August – 2014

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. What are the elements of corporate planning process? Explain the social responsibility of management.

2. Explain different models of Organizational Behaviour.

3. Discuss the concept of behaviour. What are the managerial implications of individual behaviour?

4. Explain the managerial application of perception. What are the components of learning process?

5. Does human resource is an Asset or Liability to the organization. Explain the importance of HRM.

6. What are the factors affecting job design? Discuss contemporary issues in job design.

7. What are the barriers to effective selection?

8. What is your perception about contemporary issues in HRM?

CODE No.:10MC40101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Regular/Supplementary Examinations August - 2014

UNIX PROGRAMMING USING C ++

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain the file handling utilities and process utilities with example.

2. Explain about the control structures used in Shell programming with suitable examples.

3. Explain about template functions and exception handling features of C++.

4. Explain the concepts of Hard and Symbolic links.

5. Using directory related functions display current directory contents and corresponding details. (Name, size, date of modification, number of links, inode number, user id and group id)

6. Write an outline shell implementation showing I/O redirection arrangements for the execution of commands that have I/O redirection.

7. What are POSIX .1b messages? Explain the concept of UNIX system V semaphores.

8. Explain the TLI functions. Discuss the TLI class and its usage in client/server message example.

CODE No.:10MC40102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Regular/Supplementary Examinations August - 2014

MULTIMEDIA APPLICATION DEVELOPMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. Explain DDA algorithm. Compare the advantages of Bresenham line drawing algorithm and DDA algorithm.

2. Briefly discuss about animation Sequence and Computer animation languages.

3. a) Write the syntax for interfaces.
b) Briefly explain about handling multiple types of exceptions.

4. What is a construct function? What are the properties of construct functions? Explain with examples.

5. Explain hierarchical search algorithm for motion vectors in video compression.

6. Explain in detail about the various animation techniques.

7. Explain about multimedia over ATM networks.

8. What are the qualities of Multimedia Data Transmission?

CODE No.:10MC40104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Regular/Supplementary Examinations August - 2014

INFORMATION RETRIEVAL SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. Describe about Digital Libraries and Data Warehouses.

2. Explain about Information Retrieval System capabilities in brief.

3. Define Cataloging and Indexing. Describe Information Extraction.

4. Explain in detail about the Inverted File Structure.

5. Compare and Contrast Statistical Indexing and Concept Indexing.

6. What are the Benefits of Clustering? Explain about Hierarchy of Clusters.

7. a) What is weighted searches of Boolean systems?
b) What is Cognition and Perception?

8. a) Explain the concept of text searching algorithm with relevant example.
b) Discuss various measures used in information system evaluation.

CODE No.:10MC40108

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Regular/Supplementary Examinations August - 2014

SOFTWARE PROJECT MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. With a neat block diagram, explain Waterfall model in detail.

2. Explain the principles of Modern Software Management.

3. Explain life cycle phases in detail.

4. Explain the Management and Technical perspective of Software Architecture.

5. a) What are the four major milestones that occur at the transition points between life cycle phases? Explain.
b) Explain the evolution of planning fidelity in the WBS over the life cycle.

6. List out the roles and responsibilities of a default project organization.

7. a) Give a note on metric automation.
b) Summarize the key differences in the process primitives for varying levels of stakeholder cohesion.

8. a) Explain about Modern Software Economics.
b) Discuss Top 10 Software Management Principles.

CODE No.:10MC40101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Supplementary Examinations January - 2014

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 file permissions and process utilities.

2. Discuss the working of Bourne Shell with detailed illustrations.

3. Describe the features of object oriented programming in C++ with illustrations to inheritance concept.

4. Explain the UNIX and POSIX file systems.

5. Explain the file and record locking.

6. Explain the UNIX kernel support for processes and process attributes.

7. Explain about POSIX semaphores with a suitable example.

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 January - 2014

MULTIMEDIA APPLICATION DEVELOPMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain line drawing algorithm and Mid-point circle algorithm.

2. Explain "Augmenting built-in classes and objects in Action script" with an example.

3. Briefly discuss about multimedia software tools.

4. What is static variable and static method? How these are useful. Explain.

5. Write about events and display hierarchies.

6. Write about programmatic animation.

7. What is video compression based on motion compensation? Explain its usage.

8. What are the advantages of multimedia over IP? Explain each advantage.

CODE No.:10MC40103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Supplementary Examinations January - 2014

INFORMATION SECURITY

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain different types of security attacks on the computer system.

2. Discuss the four generations of antivirus software.

3. Discuss in detail RSA algorithm highlighting its computational aspect and security. Perform decryption and encryption using RSA algorithm with p=3 q=11 e=7 and M=5.

4. a) Compare and contrast SHA-1 and HMAC functions.
b) Explain the various steps involved in the HMAC algorithm.

5. i) Discuss the design principles of firewall.
ii) What is meant by password management?

6. a) Draw and explain Encapsulating Security Payload.
b) Differentiate Tunnel mode and Transport mode.

7. Explain the services of PGP.

8. Explain about Virus and related threads.

CODE No.:10MC50101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular/Supplementary Examinations January - 2014

OBJECT ORIENTED ANALYSIS AND DESIGN

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain with an example the object-oriented modeling.
b) Discuss the conceptual model of the UML**.**

2. Explain advanced classes, advanced relationships and interfaces.

3. Explain about forward and reverse engineering in detail.

4. What are the various modelling flows of Interaction diagram? Explain.

5. Explain in detail about the Use Case diagram and give one example.

6. a) Differentiate Processes and Threads. How are they represented in Omh?
b) Write short notes on Deployment diagrams.

7. Define Design pattern. Explain about solving of design problems using Design Patterns.

8. Explain in detail about spelling checking and hyphenation.

CODE No.:10MC50102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular/Supplementary Examinations January - 2014

MANAGEMENT INFORMATION SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What is MIS? Explain the systems approach in MIS.

2. Describe the concepts of Management, Management Process and Information needs.

3. Explain about Decision-assisting information systems.

4. a) Distinguish between performance specifications and design specifications.
b) What are the sources of information?

5. What is a subsystem? What information need for defining subsystem?

6. Write a note on Inputs, Outputs and Processing of subsystems.

7. Explain the procedures for Implementation in the organization.

8. Explain about pitfalls in MIS development process.

CODE No.:10MC50103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular/Supplementary Examinations January - 2014

MIDDLEWARE TECHNOLOGIES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the benefits of Client Server Computing.
b) Explain the pitfalls of Client Server Computing.

2. a) Differentiate between Centralized and Distributed computing.
b) Write a note on: Message Oriented Middleware.

3. a) Explain in detail: Garbage Collection in context of a class.
b) What are .NET Assemblies? Explain in detail.

4. Write notes on:
a) JDBC Client Server
b) CORBA with Java.

5. Explain about XML Web Services in detail along with its respective code.

6. Explain in detail the activation services in CORBA.

7. a) Explain the events in CORBA component model.
b) What is meant by component packaging?

8. Explain the EJB architecture with neat diagram, specify both client and server side environments.

CODE No.:10MC50106

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular/Supplementary Examinations January - 2014

SOFTWARE TESTING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Define Testing and explain the purpose of Testing.

2. a) State and Explain various kinds of loops with suitable examples.
b) Discuss how to select optimal paths for C1+C2.
(statement coverage + Branch coverage)

3. What is a dataflow testing strategy? Give an example and distinguish the Testing applications and tools.

4. What is Domain Testing? Discuss applications of Domain Testing.

5. List the features available in;
a) Reduction procedure.
b) Regular expression.
c) K-V Charts.

6. Write detail notes about state graphs and distinguish good, bad state graphs.

7. a) What is metric? Explain Structural metrics and Hybrid metrics.
b) What are the properties of relations?

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/Supplementary Examinations January - 2014

CLOUD COMPUTING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain the objectives of Virtualization and benefits of Virtualization Technology.

2. a) What is Application virtualization? What do you mean by virtual bubbles?
b) What are the benefits offered by Application virtualization to organizations?

3. Discuss the various security issues in virtualized infrastructures.

4. a) Define Virtualization.
b) Why Virtualize?
c) What can be Virtualized?

5. Describe cloud computing architecture. Explain essential characteristics of PaaS.

6. What is cloud computing deployment model? Classify different cloud deployments and explain their role and functioning with the help of suitable diagram.

7. Explain how data security achieved in cloud in detail.

8. Compare the tools of Amazon S3 and Google AppEngine.

CODE No.:10MT10301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

GENERAL MICROBIOLOGY AND BIOCHEMISTRY

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Contributions of Louis Pasteur and Robert Koch to the basic microbiology. Write Koch postulates and cite two situations where Koch postulates cannot be used to establish the etiology of a disease.

2. Enumerate major nutritional types of microorganisms. Add a note on how you can obtain a pure culture by spread plate and streak plate method.

3. Write in detail about Monoauxic, Diauxic and synchronized growth and describe the environmental factors that affect the bacterial growth curve.

4. Characteristic features of three domains of life.

5. Basic differences between Gram positive, negative and archial cell walls and describe the mechanism of gram staining. List five major limitations of Gram-staining.

6. Specify the differences in polyphasic and numerical taxonomy and add basic principles in bacterial classification.

7. Describe briefly the primary, secondary, tertiary and quaternary structure of a protein and its implications.

8. Write short notes on any THREE of the below given

a) Mycobacterium.
b) VAM.
c) Bacterial endospore.
d) Agrobacterium T-DNA role in genetic trasformation .
e) Lectins.

CODE No.:10MT10302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

MOLECULAR BIOLOGY

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the structure of biologically active form of DNA.
b) Discuss how the genes are arranged on the chromosome.

2. a) What are the methods available for analysis and separation of DNA?
b) How can one detect DNA modifications?

3. Describe Eukaryotic transcription in detail.

4. Discuss the process of protein synthesis in prokaryotes. How is this different in eukaryotes?

5. What are plasmids and how do you classify them? Describe different types of plasmids in detail.

6. Comment on
a) Gene suppression.
b) Mutagenic agents.

7. Write about catalytic RNA and its functions.

8. Discuss different animal cloning methods, risks and applications.

CODE No.:10MT10303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

MICROBIAL ENGINEERING

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Write about the different methods for preservation of industrial microorganisms.
b) Discuss about different steps in Bioprocess.

2. a) Discuss about complex media used in fermentation technology.
b) Write about the role of water in the fermentation media.

3. Fermentation slurry containing Streptomyces kanamyceticus cells is filtered using a continuous rotary vacuum filter. 120 Kg h^{-1} slurry is fed to the filters; 1 Kg slurry contains 60g cell solids. To improve filtration rates, particles of diatomaceous earth filter aid are added at a rate of 10 Kg h^{-1}. The concentration of kanamycin in the slurry is 0.05% by weight. Liquid filtrate is collected at a rate of 112 Kg h^{-1}; the concentration of kanamycin in the filtrate is 0.045% (w/w). Filter cake containing cells and filter aid is continuously removed from the filter cloth.

a) What percentage liquid is the liquid cake?
b) If the concentration of kanamycin in the filter cake liquid is the same as in the filtrate. How much kanamycin is absorbed per Kg filter aid?

4. Malonic acid and water are initially at 25^0C. If 15g malonic acid is dissolved in 5 Kg water how much heat must be added for the solution to remain at 25^0C? What is the solution enthalpy relative to the components?

5. Yeast is grown anaerobically in continuous culture at 30^0 C. Glucose and ammonia is used as carbon and nitrogen source. A mixture of glycerol and ethanol is produced. At steady state, mass flows to and from the reactor are
Glucose in: 36 kg/h; NH_3 in: 0.4 kg/h; Cells out: 2.81 kg/h; Glycerol out: 7.94 kg/h;
Ethanol out: 11.9 kg/h
CO_2 out: 13.6 kg/h; H_2O out: 0.15 kg/h
Heat of combustion (kJ/g mole) data are as follows:
Glucose = -2805 ; NH_3 = -382.6 ; glycerol = 1655.4 ; ethanol = -1366.8
Calculate the cooling requirements

6. a) Write about steps involved in media sterilization.
b) Write about steps involved in sterilization of air and filter.

7. a) Explain about unstructured model for microbial growth.
b) The substrate concentration versus specific growth rate date were collected for growth of *Saccharomyces cervivisiae* on glucose in a fermentor and presented as follows.

S (g/l)	15	12	9	6	2.5	1.7
μ (h^{-1})	0.34	0.33	0.32	0.3	0.22	0.18

Calculate Monod constants.

8. a) Explain the models of plasmid stability.
b) Write about social consideration for the production of r-DNA products.

CODE No.:10MT10304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

IMMUNOLOGY

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain humoral and cell mediated immune response.

2. Elaborate on structure and functions of B and T lymphocytes and add a note on MHC and HLA.

3. What are different types of antigens and explain the cross-reactivity of antigens?

4. Discuss about
   a) T- Cell maturation
   b) Classes and sub classes of immunoglobulins
   c) Generation of antibody diversity

5. Compare the principle, methodology, applications and advantages of RIA and EIA.

6. Write a brief note on characteristic features of Class 1 and Class II MHC molecules.

7. Define hypersensitivity. Mention the types and controlling measures of it.

8. Write an account on autoimmune diseases.

CODE No.:10MT10305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

PROCESS ENGINEERING PRINCIPLES

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Define a unit operation and a unit process and write a short note on at least three unit operations and unit processes.
b) The force F exerted on a body immersed in a flowing fluid is dependent on the relative velocity between the solid and the fluid $\boldsymbol{u}$, the fluid density $\boldsymbol{\rho}$, the fluid viscosity $\boldsymbol{\mu}$ and a characteristic length of the body $\boldsymbol{l}$. Using Rayleigh's method, determine the dimensionless groups in which the dimensional variables may be arranged.

2. a) Compute the work done in following cases: i) 10kg mass of water is evaporated at atmospheric pressure until a volume of 1.25 m^3 is occupied. ii) Steam admitted to cylinder of a engine of stroke = 35 cm and bore = 18 cm at a constant pressure of 100 kgf/cm^2.
b) What is enthalpy? Is enthalpy a path function?

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) Discuss the pressure drop across fluidized beds.
b) Describe the operation of atleast two fluid moving machinery.

5. a) Derive the equation to determine the heat transfer through a composite plane wall in series.
b) A stagnant liquid film of 0.4 mm thickness is held between two parallel plates. The top plate is maintained at 40^0C and the bottom plate is maintained at 30^0C. If the thermal conductivity of the liquid is 0.14 W/(m K), then calculate the steady state heat flux (in W/m^2) assuming one-dimensional heat transfer .

6. a) Discuss in detail about the principle and work of shell and tube heat exchanger.
b) Using boiling curve, discuss the boiling heat transfer in detail.

7. a) Discuss in detail about different film theories to explain the interphase mass transfer.
b) Explain the importance of Schmidt number, Sherwood number, Lewis number and Reynolds number.

8. a) Discuss in detail how to calculate the tower height and number of transfer units in Gas-liquid absorption.
b) Discuss in detail about McCabe-Thiele method to determine the number of plates in distillation.

CODE No.:10MT10306

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

ANALYTICAL TECHNIQUES IN BIOTECHNOLOGY

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What is electrophoresis? Explain the principles and experimental procedure for separation of proteins by SDS-PAGE.

2. Write principle and applications of ultracentrifuge.

3. Discuss the instrumentation and use of HPTLC and FPTLC techniques.

4. Define molar extinction coefficient. Explain the principle, instrumentation and applications of UV-Visible spectrophotometer.

5. Discuss the procedure and applications of MALDI Tof.

6. How is a radioactive isotope different from normal isotope? Explain the principle and applications of Geiger-Muller counter.

7. Explain the following: a) Nucleic acid synthesizer
b) Lyophylization and its applications.

8. Write Principle and application of scanning electron microscopy.

CODE No.:10MT10501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

COMPUTER ARCHITECTURE

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Simplify the following expressions by using
i) Sum – of – products form and ii) Product – of – sums form
a) x' z' + y' z' + y z'
b) A C + B' D + A' C D + A B C D

2. a) Draw and explain the functional units of a computer.
b) With the help of a suitable example, explain the arithmetic addition with overflow.

3. a) Describe in detail about the register transfer of information.
b) What are the two instructions in the basic computer in order to set the E flip flop to 1?

4. a) Draw and explain the n – bit two's complement adder – subtracter.
b) Explain Roberston algorithm to perform floating point multiplication.

5. Discuss in detail about the different types of Read Only Memories.

6. a) Give brief description about Static RAM along with its operations.
b) What is meant by locality of reference? Explain it in detail.

7. Discuss in detail about the input output interface.

8. Write short notes on the following
a) Hypercube interconnection.
b) Dynamic Arbitration algorithm.

CODE No.:10MT10502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

DISCRETE STRUCTURES AND AUTOMATA THEORY

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Show that $(R \rightarrow \neg Q), R \vee S, (S \rightarrow \neg Q), P \rightarrow Q \Rightarrow \neg P$.
b) Obtain the product-of-sums canonical form of the formula $(P \wedge Q) \vee (\neg P \wedge Q \wedge R)$.
c) Provide a proof by contradiction of the following statement.
For every integer n, if $\boldsymbol{n^2}$ *is odd then n is odd.*

2. a) Let A be the set of factors of a particular positive integer *m* and let $\leq$ be the relation divides, *i.e.,* $\leq = \{\langle x, y\rangle | x \in A \wedge y \in B \wedge (x \text{ divides } y)\}$. Draw the Hasse diagrams for *m*= 12 and *m*=45.
b) In a lattice, show that $(a * b) \oplus (c * d) \leq (a \oplus c) * (b \oplus d)$.
c) Show that the function $f(x) = x^3$ and $g(x) = x^{1/3}$ for $x \in R$ are inverse of one another.

3. a) Define Binomial and Multinomial theorems and explain with simple example.
b) Find the generating function of n^2+n.

4. a) How do you differentiate a tree from a graph? For a binary search tree T, the Postorder and Preorder traversal sequences are given as - A C F D B and B A D C F respectively. What is the structure of the tree T?
b) Give a method to visit all the nodes of an undirected and unconnected graph using **BFS**.

5. a) Define NFA with $\in$ moves.
b) Differentiate Moore and Mealy machines.
c) Write the steps in minimization of FA.

6. Define the following with example
i) Regular grammar.
ii) Linear grammar.
iii) Left linear grammar.
iv) Right linear grammar.

7. a) Write the procedure for eliminating unit productions from a given CFG.
b) Construct PDA for the grammar
S → aA
A → aABC/bB/a
B → b
C → c

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 February - 2014

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) Define queue? What are the advantages of a circular queue over a queue?
b) Explain different ways of implementing the priority queues. And give the algorithm for inserting the smallest element for one of the methods.

2. a) Explain different methods of tree traversals. Give example for each.
b) If m and n are two different nodes in the same tree, show that exactly one of the following statements is true:
i) m is to the left of n
ii) m is to the right of n
iii) m is a proper ancestor of n
iv) m is a proper descendant of n.

3. a) What are the criteria for judging the algorithms performance? Give examples to compute the same.
b) Prove that if $\mathbf{f(n)=a_m n^m+\ldots.+a_1 n+a_0}$ **and** $\mathbf{a_m>0}$**, then** $\mathbf{f(n)=\theta(n^m)}$.

4. a) How we can balance the AVL trees in the case of insertion operation. Explain.
b) Why B-Trees? Why not we restrict to binary trees? Mention at least one practical example where B-Trees are used.

5. Define Red-Black Trees. Explain the deletion of an element into a Red-Black Tree.

6. a) Explain Strassens matrix multiplication in detail.
b) Describe the general method of Greedy Approach.

7. Using branch and bound method find an optimal tour for the following sales person problem instance

$$\begin{bmatrix} \infty & 11 & 10 & 9 & 6 \\ 8 & \infty & 7 & 3 & 4 \\ 8 & 4 & \infty & 4 & 8 \\ 11 & 10 & 5 & \infty & 5 \\ 6 & 9 & 5 & 5 & \infty \end{bmatrix}$$

8. a) Describe how Eight Queen's problem can be solved using back tracking. Write the algorithm.
b) Write a short note on the following:
i) FIFO branch and bound ii) LC 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 February - 2014

SOFTWARE ENGINEERING

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain briefly about generic process framework in software engineering.
b) Discuss about software myths.

2. a) Explain about the incremental process model.
b) What are the advantages and disadvantages in adopting waterfall model?

3. a) What is requirements management? Explain.
b) Explain briefly about Behavior models.

4. Explain with examples different design heuristics for effective modular design.

5. From the Software Engineering perspective how are analysis and design carried out for the user interface ? Illustrate with an example.

6. a) Explain about the unit testing and integration testing.
b) Explain the art of debugging in software engineering.

7. a) Explain about object oriented testing methods.
b) Discuss about white box testing.

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 February - 2014

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 and 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) Compute the closure of the following set F of FD's for relation scheme.
R = (A, B, C, D, E)
A→ BC
CD→ E
B →D
E →A
List candidate keys for R?
(b) Explain the concept of functional dependencies and its implementation in normal form with example.

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) $R(A,B) \div S(A) R(A,B) \div S(A)$

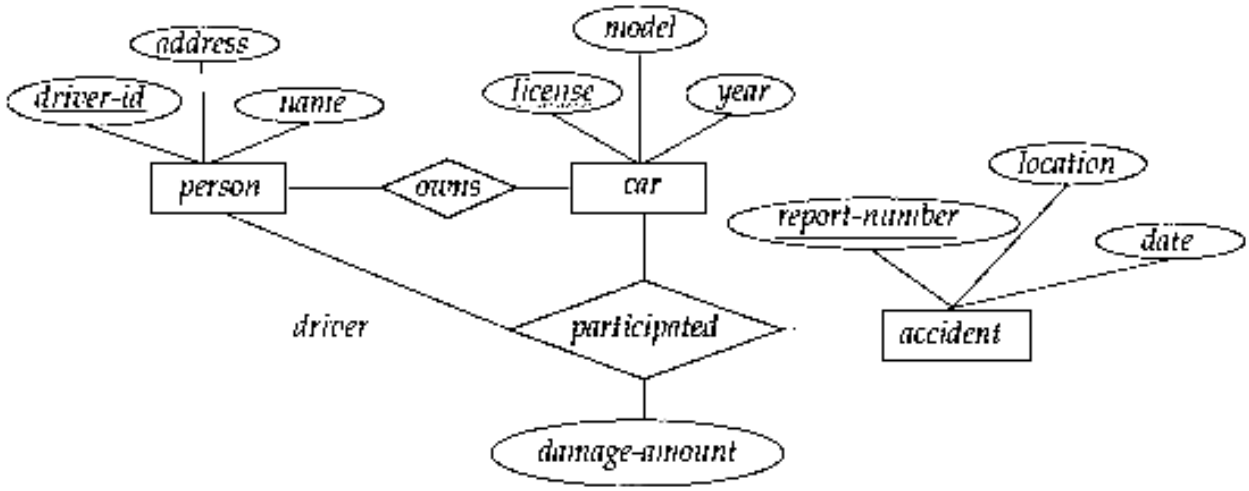
4. (a) Describe the concepts of cursors in embedded SQL and stored procedures.
(b) What are the differences between stored procedures and functions? Explain with example.

5. (a) Discuss the techniques for allowing a hash file to expand and shrink dynamically. What are the advantages and disadvantages of this over other hashing techniques?
(b) Construct a B^+ tree with fanout (the number of points per node) equal to 3 for the following set of key values 80, 55, 15, 75, 30, 100, 90, 85, 20. Assume that the tree is initially empty and the values are added in the order given.
(i) Show the tree after insertion of 30, and after the insertion of 20.
(ii) The key values 75, 80, 90, 100 are now deleted from the tree in that order. Show the tree after each deletion.

6. (a) Explain the recovery procedure that is followed in deferred database modification scheme.
(b) Explain the use of check points in transaction processing.

7. What is deadlock detection and Recovery? Explain with an Example.

8. Design a relational database corresponding to the E-R diagram.



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CODE No.:10MT10509

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

SOFTWARE TESTING METHODOLOGIES

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Define Software Testing? Explain different phases involved in Tester's mental life.
b) Elaborate the differences between Testing and Debugging.

2. a) Briefly explain about the kinds of loops.
b) Explain about Multi Entry and Multi Exit routines.

3. a) Define data-flow testing.
b) Explain date-flow testing strategies.

4. a) Explain about schematic representation of domain testing.
b) Briefly explain about restrictions in domain testing.

5. a) If X=abcd+fgh+klm ; Y=pqr+tuv+xyz ; Z=es+mn; Then calculate
i. XY
ii. X(Y+Z)
iii. X+Y+Z
b) Write the procedure for specification validation.

6. a) Write the design guidelines for building finite state machine into code.
b) Explain with an example how to convert specification into state-graph. Also discuss how contradictions can come out.

7. Explain in detail about Node reduction Algorithm with illustration.

8. Explain the methodology how to evaluate automated testing tools.

CODE No.:10MT10701

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

ADVANCED CONTROL SYSTEMS

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. The controlled plant of a unity feedback system is given by

$$G(S) = \frac{K}{S(S+5)}$$

It is specified that the velocity error constant of the system be equal to 15, while the damping ratio is 0.6 and velocity error is less than 0.25 radians per unit ramp input. Design a suitable lag compensator.

2. The open loop transfer function of a unity feedback control system is given by

$$G(S) = \frac{1}{s(s+1)}$$

Design a PD controller so that the phase margin of the system is 30° at a frequency of 2rad/sec.

3. a) Define the terms 'Completely Controllability' and 'Completely Observability' of a linear time invariant system.

b) Consider the System

$$\begin{bmatrix}\dot{x}_1\\ \dot{x}_2\\ \dot{x}_3\end{bmatrix} = \begin{bmatrix}2 & 0 & 0\\ 0 & 2 & 0\\ 0 & 3 & 1\end{bmatrix} \begin{bmatrix}x_1\\ x_2\\ x_3\end{bmatrix}$$

With an output

$$\begin{bmatrix}y_1\\ y_2\end{bmatrix} = \begin{bmatrix}1 & 1 & 1\\ 1 & 2 & 3\end{bmatrix} \begin{bmatrix}x_1\\ x_2\\ x_3\end{bmatrix}$$

Show that the system is completely observable.

4. a) Classify and explain different types of singularities.

b) Obtain the singular points of the system and establish their character

$$\dot{x}_1 = x_2$$
$$\dot{x}_2 = -x_2 - 4x_1 + 4x_2^3$$

5. Consider the system

$$\ddot{x} + \dot{x} + x^3 = 0$$

Given that x(0) = 1 and $\dot{x}(0) = 0$ construct the phase plane trajectory

6. a) Define the term 'stability' and 'asymptotic stability' in the sense of Lyapunov.

b) For the linear system

$$\dot{x}_1 = x_2$$
$$\dot{x}_2 = -6x_2 - 5x_1$$

Discuss the stability of the system using the Lyapunov method.

7. A single input system is described by the following state equation.

$$\dot{x} = \begin{bmatrix} -1 & 0 & 0 \\ 1 & -2 & 0 \\ 0 & 1 & -3 \end{bmatrix} x + \begin{bmatrix} 10 \\ 1 \\ 0 \end{bmatrix} u$$

Design a state feedback controller which will give closed loop poles at -1+j2, -6.
Draw a block diagram of the resulting closed loop system.

8. a) State and explain the fundamental theorem of the calculus of variations.
b) Test for extrema of the following functional

$$J(x) = \int_1^2 \frac{t^3}{\dot{x}(t)^2}\, dt$$

X(1) = 1 and x(2) = 4

CODE No.:10MT10702

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

EHVAC TRANSMISSION

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

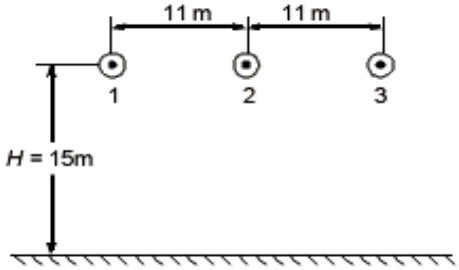
Answer any FIVE questions
All questions carry equal marks

1. a) Explain about standard transmission voltages.
b) Derive the formula for inductance of multi-conductor line.
c) Discuss the advantages and disadvantages of bundle conductors.

2. The dimensions of a 3-phase 400-kV horizontal line, as shown in the Fig. below:

H = 15 m, S = 11 m phase separation, conductor 2 × 3.18 cm dia, and B = 45.72 cm.

Calculate:
i) The matrix of capacitance per km, for untransposed configuration, and
ii) The same when there is complete transposition.



3. a) Explain about voltage gradients on sub conductors.
b) Derive the expressions for computing electrostatic field components near an EHVAC line.

4. Derive the expression for total electrostatic field component of 3 - phase double circuit line.

5. a) What is Ferranti effect? Explain.
b) What do you understand by voltage control? Explain any one method of voltage control in detail.

6. (a) What is mean by Attenuation of voltage on traveling waves? Explain.
(b) Explain the generation and characteristics of Audible noise.

7. a) Explain how AN is measured?
b) Explain the frequency spectrum of the RI field of line.

8. a) Explain the Design Factors of EHV lines under transient limits.
b) Explain the Electrical characteristics of EHV cable.

CODE No.:10MT10703

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

MICROPROCESSORS AND MICROCONTROLLERS

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Draw and explain maxi mode of 8086.
b) Write functions of ALE pin.

2. a) Explain the flag register of 8086/8088.
b) what is the reset add of 8086.

3. a) Draw the interfacing diagram of 8255 (PPI) with 8086 microprocessor. Clearly show how to generate the addresses for port-A , port-B, port-C and Control word register.
b) Write an Assembly language program to get digital equivalent of dc voltage connected to input of analog to digital converter(ADC) with the help of interfacing diagram.

4. a) Draw and discuss the internal architecture of 8259A.
b) Draw and discuss the synchronous mode transmitter and receiver data formats of 8251.

5. a) What is the significance of memory paging in 80386? Explain the process of physical address calculation.
b) Explain the architectural differences between Pentium and Pentium Pro microprocessors.

6. a) Discuss the memory organization of Intel 8051 micro controller. What instruction could be used to fetch data from external memory?
b) Write a brief note on use of different special function registers in Intel 8051.

7. Define the following SFR's in 8051 microcontroller
i) TMOD
ii) PSW
iii) PCON
iv) IP
v) SCON
vi) TCON

8. Draw and explain the hardware circuit for key board interfacing.

CODE No.:10MT10704

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

POWER SYSTEM CONTROL & STABILITY

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the effect of excitation system on transient stability.
b) A Synchronous machine having inertia constant H=4 MJ/MVA is initially operated in steady state against an infinite bus with angular displacement of 30^0 and delivering 1.0 p.u power. Find the natural frequency of the oscillations for this machine, assume small perturbation from the operating point.

2. Explain the effect of speed governor with one time lag on the dynamic performance of synchronous machine with suitable performance.

3. a) Explain dynamic stability.
b) Explain the effect of excitation on dynamic stability.

4. Derive and explain the block diagram of approximate model of complete exciter.

5. a) Discuss the various fundamental characteristics of Excitation system.
b) Using the DC exciter with $\mathbf{K_E=1.0; S_E=0; T_E=0.5\ sec}$; compute the response of $\mathbf{V_f}$ for a constant input of $\mathbf{V_R=1.0}$. Use an initial value of $\mathbf{V_f=0}$.

6. a) With the help of necessary block diagram discuss non-continuous acting system.
b) Derive the state space model for Type-2 system with neat block diagram.

7. a) Explain briefly popov's method of constructing liapunov function.
b) Explain briefly zubov's method of constructing liapunov function.

8. What is Voltage stability? Briefly explain the Integrated analysis of Voltage and Angle stability.

CODE No.:10MT10705

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

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) Briefly explain the objectives of load compensation.
b) Explain the Reactive power characteristics of load compensation.

2. a) Explain about the compensators that are suitable for surge impedance compensation of transmission lines.
b) Explain about the dynamic working of a midpoint compensator.

3. a) Explain the necessity of adjustable reactive power compensation in a power system.
b) Describe how TCR is going to respond during the various characteristic time periods.

4. a) Briefly discuss the objective of reactive power coordination.
b) Explain the effect of under voltage, frequency and harmonics on quality in power supply.

5. a) Classify the customer categories in distribution networks.
b) Explain about the additional tariff features that are incorporated to aid demand side management.

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. Write a short notes on
a) Selection of Capacitors
b) KVAR requirements for domestic appliances.

8. a) Briefly explain the typical Layout of traction systems.
b) Write short notes on 'Power factor of Arc furnace'.

CODE No.:10MT10708

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

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 flucatuations, voltage harmonics and differentiate them.

2. Explain the various types of interruptions.

3. a) Explain stochastic prediction of short interruptions.
b) In case of single phase tripping, Discuss about the variations of voltage and current during fault and post fault periods.

4. a) Explain how magnitude and phase angle jumps for three phase unbalanced sags can be found.
b) Explain how voltage sag can be computed in meshed systems.

5. a) Describe the different mitigation methods of DC drives to overcome Power Quality Disturbances.
b) What are the effects of voltage sag on the operation of adjustable speed AC drives?

6. a) Give the overview of interruptions and voltage sags mitigation methods.
b) Explain, how do you improve equipment immunity against interruptions and voltage sags.

7. a) Explain in detail the different harmonic indices.
b) Explain the harmonic sources from the commercial loads.

8. a) Describe various methods available for measuring flicker.
b) Explain off-line power quality data assessment.

CODE No.:10MT12501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

ADVANCED DATA STRUCTURES AND ALGORITHMS

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) List the applications of Stack.
b) What are the advantages of doubly linked list over singly linked list?

2. a) Describe Big O Notation in Algorithm analysis.
b) Compare Polynomial and Exponential Algorithms.

3. a) Explain the operations performed on Threaded Binary tree in detail.
b) Write the routine for Depth First and Breadth First traversals.

4. a) Explain the AVL rotations.
b) Write a routine to search an element in a Binary search tree.

5. a) Explain extendible hashing to resolve collision.
b) Write an algorithm to perform insertion in a B-tree.

6. a) What are the steps in quicksort algorithm?
b) Explain greedy algorithm.

7. a) With an example explain Travelling Salesman Problem.
b) Write short notes on Dynamic Programming Problem.

8. a) Give the backtracking algorithm for 8 queens problem.
b) Write a routine for Least Cost Search.

CODE No.:10MT12502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

ADVANCED SOFTWARE ENGINEERING

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Define the following terms:
   a) Software
   b) Software Engineering
   c) Software Process

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. a) List the principal dimensions of dependability.
   b) Give the structure of an algebraic specification.
   c) Write short notes on reliability metrics.

4. a) How does component-based development take place?
   b) Give the salient paradigms of component-oriented software engineering.

5. What are the different levels of Software Testing? Discuss different approaches to Integration Testing?

6. What is Aspect Oriented Software Engineering? How it streamlines the complex systems development without sacrificing flexibility and scalability?

7. a) Describe any Five (5) software quality attributes.
   b) Explain the goals of CMMI process improvement framework.

8. a) What is Ethnography and describe its role UI design?
   b) Describe the User Interface design principles.

CODE No.:10MT12503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

MIDDLEWARE TECHNOLOGIES

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. (a) What is "middleware"? What is the main function of middleware? Write about service specific middleware.
(b) What are the different types of servers?

2. a) Discriminate Interfaces as Contracts.
b) What is connection oriented programming? Explain with the help of an example.

3. Write brief notes on
(a) Aspect Oriented Programming
(b) Subject Oriented programming

4. a) Briefly explain about.NET framework.
b) Explain about
i) UDDI ii) SOAP

5. a) Describe the Common Language Infrastructure.
b) What is Common Language Runtime? Explain.

6. Explain how ADO.NET is used to access data defined in XML. Discuss suitable examples.

7. a) Draw the servlet development life cycle.
b) How does deploying distributed applications using EJB.

8. (a) Discuss why system object model has become obsolete.
(b) Explain the evolution of object request broker services.

CODE No.:10MT12504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

SOFTWARE METRICS

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the role of metrics in software Engineering.
b) What information is required by the manager in order to understand and control a software development project?

2. a) Define measurement and briefly summarize the representation condition for measurement.
b) What is a prediction system? How does it differ from measurement system?

3. a) What is meant by validation? Explain its role in software measurement.
b) Define process. Explain its role in classifying software.

4. a) Explain in detail, how to store and extract data.
b) Give brief description about data collection forms.

5. a) Discuss in detail about the Albercht's approach for functionality.
b) Write a short notes on Reuse.

6. a) What is tree impurity and explain the characteristics of tree impurity?
b) Explain chidamber and kemerer measures for object-oriented systems.

7. a) Describe about defects-based quality measures.
b) Write a brief note on usability measures.

8. a) Explain capability maturity model in detail.
b) Draw and explain the architecture of SPICE for process assessment.

CODE No.:10MT12505

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

SOFTWARE REQUIREMENTS AND ESTIMATION

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is meant by software requirements? Discuss the essential software requirement.
b) Discuss about risk Management.

2. a) Discuss about software quality attributes.
b) Define and explain about the elicitation techniques.

3. What is the difference between RDD (Requirements Definition and Description) and SRS (Software Requirements and Specifications)? What role do these documents play in the project development life cycle and the product development life cycle? Explain with an appropriate example.

4. What is necessity for modeling requirements? Discuss about data flow diagrams and object analysis with suitable examples.

5. a) What are the views of sizing? Explain.
b) Draw the schematic representation of the FPA method with neat diagram.

6. Many project managers plan their schedules based on programmer productivity on past projects. This productivity is often measured in terms of a unit of size per unit of time. For example, an organization may produce 300 lines of code per day or 1200 application points per month. Is it appropriate to measure productivity in this way? Discuss the measurement of productivity in terms of the following issues:

- Different languages can produce different numbers of lines of code for implementation of the same design
- Productivity in lines of code cannot be measured until implementation begins Programmers may structure code to meet productivity goals

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. Write short notes on any THREE of the following:
a) Caliber - RM
b) SLIM
c) Problem Frames
d) Requirements analysis documentation.

CODE No.:10MT12508

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

VIRTUALIZATION AND CLOUD COMPUTING

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Differentiate the following terms:
   i. Cloud Computing
   ii. Grid Computing
   iii. Utility Computing
   b) What is Virtualization and What are its benefits?

2. Explain how virtualisation impacts the following:
   a) Parallel 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. Explain how virtualisation increases availability of services in cloud computing? And describe the various parameters that are useful in evaluating the performance and quality of service issues of a cloud.

5. What is Cloud Computing? Describe Cloud Application Architectures.

6. Describe the goals of on demand and transactional computing and explain how cloud computing will meet the challenges of on demand and transactional computing.

7. Explain Data Security concept in Cloud Computing.

8. Write a short note on:
   a) SaaS.
   b) Utility Computing.
   c) Storage virtualisation technologies.

CODE No.:10MT13801

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

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) List out the properties of autocorrelation and cross-correlation sequences with suitable expressions.

b) Consider the two finite length sequences: x[n] = [1 3 -2 1 2 4 4 2]; y[n] = [2 -1 4 1 -2 3]. Compute and plot cross-correlation sequence of them.

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) Design a digital sine-cosine generator with no input and draw its structure diagram.

b) The system transfer function for a discrete-time digital system is given by

$$H(z) = \frac{0.8 - 1.6z^{-1} + 2.4z^{-2} - 1.6z^{-3}}{1 - 1.9z^{-1} + 2.6z^{-2} - 1.7z^{-3} + 0.8z^{-4}}$$

Develop a state space representation for the system using the form $Q[n] = A\,Q[n-1] + B\,x[n]$; $y[n] = C\,Q[n-1] + D\,x[n]$. Clearly, identify the **A**, **B**, **C**, and **D** matrices for your implementation.

4. a) Outline the computationally efficient method of evaluating the sliding DFT

b) Explain how ZoomFFT algorithm is computationally efficient for calculation of a subset of the DFT samples

5. Design a four stage decimator where sampling rate has to be reduced from 20KHZ to 500KHZ. The specification of decimator filter H(z) are:
Pass band edge: 200HZ, stop band edge = 220Hz
Pass band ripple : 0.004, stop band ripple = 0.002
Determine filter length and number of multiplications per second.

6. a) Prove that Periodogram is an inconsistent in estimation of power spectral density.

b) Discuss how the variance of the power spectrum can be reduced using Bartlett method of Power spectrum estimation.

7. a) State and prove the properties of Auto correlation function of a WSS random process.

b) Find the mean and Autocorrelation of the sequence

$x[n] = w[n] - 2w[n-1] + w[n-2]$, *where* $w[n]$ is a white noise process with variance S_w^2.

8. Write the following:

a) Over-sampling A/D converter.

b) Spectral analysis of sinusoidal signals.

CODE No.:10MT13802

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

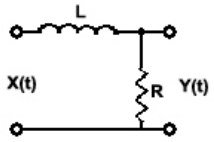
DIGITAL COMMUNICATION TECHNIQUES

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. (a) Define central limit theorem. Explain the importance of this theorem.
(b) Suppose that the low-pass L-R filter is excited by a stochastic process x(t) having a power density spectrum $\phi_{xx}(f) = \frac{1}{2}N_0, \ for\ all\ f$



Determine the power density spectrum of output $y(t)$.

2. a) Compare the spectral occupancy of various I-Q modulation techniques.
b) What are the advantages and disadvantages of M-array signalling over binary signalling in so far as baseband data transmission is concerned.

3. a) Distinguish between signal constellations of QPSK and MSK systems.
b) Explain M-ary. What is the relationship between bits per second and baud for a QPSK system?

4. Consider the signal

$$s(t) = \begin{cases} \left(\frac{A}{T}\right) t \cos 2\pi f_c t & (0 \le t \le T) \\ 0 & (otherwise) \end{cases}$$

i) Determine the impulse response of the matched filter for the signal.
ii) Determine the output of the matched filter at t = T.
iii) Suppose the signal $s(t)$ is passed through a correlator that correlates the input s(t) with $s(t)$. Determine the value of the correlator output at t=T. Compare your result with that in (ii).

5. (a) Discuss maximum - likelihood carrier phase estimation
(b) Using phase-locked loop, how phase of an unmodulated carrier is estimated?

6. (a) Draw the diagram of linear transversal filter and explain the operation.
(b) Using peak distortion criterion, how the ISI is minimized?

7. a) Explain the following techniques: i) Direct sequence ii) Frequency hopping.
b) In a direct sequence transmitter, the PN generator is driven by a clock signal at the rate of 10MHz. it has 31 stages of feedback register. Calculate the total length of sequence in hours.

8. a) Mention the schemes used for synchronization of spread spectrum systems.
b) Write short notes on coherent and non-coherent methods of carrier tracking for synchronization of spread spectrum systems.

CODE No.:10MT13803

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

DIGITAL SYSTEM DESIGN

[Digital Electronics and Communication Systems]

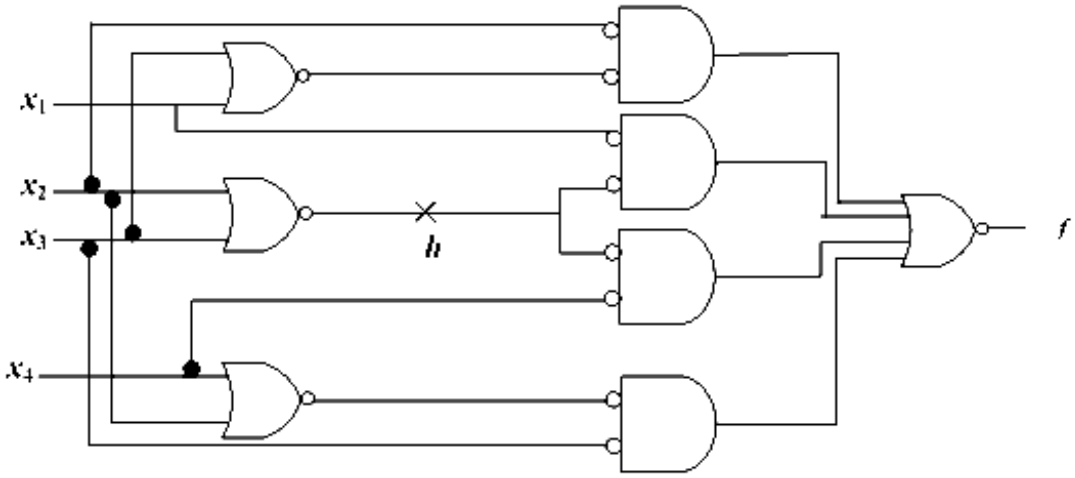
Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Draw ASM about for Binary multiplier and design it using MUXs and decoder in implementation.
b) Design a sequence detector to detect 010 and 101 sequence and for all other sequence the output Z = 0. Draw an ASM chart for the design.

2. a) Describe some important features of an FPGA and a CPLD.
b) With an example, explain how an FPGA is useful in the design of a digital circuit.

3. a) Consider the circuit and find a test for h SAO using Boolean difference method.



b) Write a note on Bridging faults and temporary faults in digital logic 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) Distinguish between Mealy and Moore machines.
b) Convert the following Mealy machine into a corresponding Moore machine.

PS	NS	
	X=0	X=1
A	B,O	E,O
B	E,O	D,O
C	D,I	A,O
D	C,I	E,O
E	B,O	D,O

6. a) Describe the advantages of PLA minimization and folding.
b) Design a 3 bit BCD to grey code converter and realize the circuit using PLA and then show that how folding will reduce the number of cross points given on the PLA.

7. a) List out and explain briefly about the faults that may occur in PLAs.
b) With an example, explain how faults are detected in a PLA.

8. a) Explain the following with examples:
i) flow table ii) state reduction.
b) With respect to an asynchronous sequential machine, explain about minimal closed corners.

CODE No.:10MT13804

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

EMBEDDED SYSTEMS

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the components of embedded system hardware? Explain them in brief.
b) Describe the formalisms for an embedded system design.

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. Describe the allocation of memory space for the tasks in embedded systems. What is function queue scheduling?

4. a) Explain the functions of host and target machines in an embedded system.
b) Write notes on debugging techniques.

5. Explain in detail Mutex.

6. Differentiate between CISC and RISC. Write one example each and explain.

7. a) Present the requirement analysis for an embedded system design.
b) Write notes on embedded system analysis and architecture design issues.

8. Write clearly about the design of an Ink Jet Printer.

CODE No.:10MT13805

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

MICROCOMPUTER SYSTEM DESIGN

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain the internal microprocessors architecture of 8086 with a neat diagram.

2. a) Explain the memory management unit of 80286. How does it improve the speed of execution?
b) What are the steps to initialize to enter protected mode in 80286?

3. Explain the memory paging mechanism of 80386 in detail.

4. Explain how the dynamic architecture of the Pentium Pro functions.

5. a) Explain the Hyper- threaded system.
b) Explain the multiple core technology

6. a) Differentiate between polling and interrupts.
b) What is Block transfer with respect to a DMA ?

7. a) What is Virtual memory ?
b) Explain Semaphore with respect to common resource sharing.

8. Explain the operation of 80x87 arithmetic coprocessor and the MMX and SIMD Unit in detail.

CODE No.:10MT13807

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

DSP PROCESSORS AND ARCHITECTURES

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Determine $H(e^{j0})$, $H(e^{j\pi})$ for FIR filter whose impulse response h(n)={1 2 3 2 1}.
b) What is decimation and interpolation? Explain the effects of these processes.

2. a) Explain dynamic range and precision with examples.
b) Explain errors which occurs when getting a digital signal from continuous signal.

3. a) With the help of two MAC units, implement an 8-tap FIR filter.
b) Explain about various bus architectures and memory.

4. a) Discuss about pipeline programming models.
b) What is the need of relative branch support? Explain.

5. a) Compare architectural features of TMS320C25, DSP56000 and ADSP2100 processors.
b) Explain functions of Barrel shifter, Multiplier/adder units of TMS320C54XX processors with diagrams.

6. a) Implement a recursive filter by using assembly language.
b) Explain about implementation of PID controller.

7. How DFT computations will be done by using FFT algorithms? Explain with signal flow graphs.

8. Explain following:
a) Multichannel Buffered serial port.
b) Memory space organization of TMS320C54XX processor

CODE No.:10MT15701

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

ANALOG IC DESIGN

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain small signal modelling of single stage BJT amplifier with neat sketches.
b) Explain common source amplifier with current mirror active load.

2. Draw the small signal model of common gate amplifier with current mirror active load and derive the gain .

3. a) Deduce the output impedance and intrinsic gain of cascode amplifier. Discuss the frequency response of the same with respect to a single stage common source amplifier.
b) Deduce a mechanism that makes a 2 stage OP amp stable against process and temperature variations. Justify your answer with appropriate frequency domain analysis.

4. a) What are the ways of improving slew rate of 2-stage CMOS opamp? And derive an expression for slew rate of CMOS opamp
b) Explain about various OPAMP compensation techniques.

5. a) Design a CMOS sample and hold circuit that minimizes clock feed through errors
b) Discuss parasitic insensitive integrator in detail.

6. a) Explain the operation of Bi-CMOS sample and Hold circuit with neat waveforms.
b) Briefly explain correlated double sampling techniques.

7. a) Discuss with the help of appropriate flowgraph the ratio independent cyclic converter.
b) Write on account of issues involved in designing flash converters.

8. a) What is over sampling? Explain over sampling with and without noise sampling.
b) Explain in detail about Band pass over sampling converter.

CODE No.:10MT15702

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

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) Write a verilog descriptive of a module that uses language primitives to implement a four input NAND gate.
b) Write the binary equivalent of the following verilog numbers.
i) 8'h7 ii) 8'O36 iii) 8'b1010-0011 iv) 12 v) 8'bX vi) 6'h2E

2. a) Explain the rules of Precedence of operators of modeling propagation delay with suitable example.
b) Explain in detail about Verilog models for Gate Propagation Delay.

3. a) Explain about procedural timing controls and synchronization in Verilog.
b) Explain various constructs in Verilog for activity flow control.

4. a) Explain the benefits of HDL based synthesis.
b) Briefly discuss different styles for Synthesis of Combinational logic with suitable examples.

5. With suitable example explain the synthesis of the following language constructs.
a) Multi- Cycle operations
b) User Defined Functions

6. a) Translate to Verilog the behavior of 3 input CMOS NAND gate at switch level abstraction.
b) Explain in detail about strength reduction by primitives in Verilog with suitable example.

7. a) Explain HDL based the design flow using various CAD (Computer Aided Design) tools.
b) Write VHDL code that finds the largest integer in the array using a for loop.

8. a) Differentiate VHDL and Verilog HDL with respect to various functional features.
b) Give the behavioral description of formatted ASCII I/O operators using VHDL.

CODE No.:10MT15703

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

DIGITAL IC DESIGN

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Define noise margin. Write about the factors which influence it.
b) Explain about Energy - Delay product in CMOS and derive an expression for VDDopt.

2. a) Explain the potential Race condition in C^2MOS. Explore different methods to overcome Race condition.
b) Explain the construction of pipelined circuits using level sensitive latches.

3. a) What is the significance of voltage scaling for low power design? Explain.
b) Explain the influence of transistor sizing on power consumption.

4. a) Explain the operation of a Dynamic RAM cells.
b) Implement a Full subtractor using Complementary static CMOS.

5. a) Explain various modes of BJT operation.
b) Compare basic BiCMOS inverter and basic BiNMOS inverter in terms of voltage swing and propagation delay.

6. a) Explain briefly the layer representation of n-well CMOS process.
b) Write briefly about wire capacitance and resistance and their effects.

7. a) Explain the need of the design rules.
b) Explain about the Mead Conway Design rules for NMOS process.

8. a) Give a transistor level realization of Adder/ Subtractor.
b) Implement ALU functions with an adder circuit.

CODE No.:10MT15704

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

HARADWARE SOFTWARE CO-DESIGN

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) List the co-design models and explain any one of them with suitable architecture.
b) Explain in detail about a generic co-design methodology.

2. Explain the following with respect to HW/SW Partitioning:
a) Granularity selection
b) Metrics and estimations.

3. a) Discuss the different kinds of emulation systems offered by Quickturn.
b) Describe how prototyping differs from emulation.

4. a) Differentiate incrementally controlled co-processors and partially dependent co-processors.
b) Describe the implementation of microcontroller FSM.

5. Explain the practical considerations 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) Write a brief notes on design specifications used in co-design.
b) Explain in detail the specification languages used in protocol specification.

8. Write notes on any TWO of the following.
a) Multi language co-simulation.
b) Lycos system.
c) Heterogeneous specifications.

CODE No.:10MT15705

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

VLSI TECHNOLOGY

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Illustrate the nMOS fabrication process with diagram.
b) Draw the 4-terminal symbol of PMOS enhancement and NMOS depletion mode transistor. Differentiate between enhancement mode and depletion mode transistor.

2. a) How body effect will depend on substrate doping? Explain the body effect on nMOS device.
b) Derive the pull-up to pull-down ratio for an nMOS inverter driven through one or more pass transistors.

3. a) What are the different layers used for designing CMOS inverter?
b) What do you understand by 2um double poly, double metal nwell cmos process?

4. Explain the following in detail
a) Pseudo NMOS Inverter
b) C2MOS Logic.
c) Dynamic Logic.

5. a) Implement 4x1 multiplexer using switch logic network.
b) What is logical effort, electrical effort and branching effort? Write the equation of path delay.

6. a) Draw the circuit diagram of D-Flip flop.
b) Explain in brief the sequential system design.

7. a) Explain in brief the three phases of floorplanning.
b) Explain the different clock distribution networks.

8. a) Explain a chip design methodology with example.
b) What is scheduling? How to do it in VLSI design?

CODE No.:10MT15706

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

ASIC DESIGN

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Give the tradeoff between general purpose processor for specific application and full custom design ASIC chip for specific application.
b) What is NRE? Compare and explain how NRE will vary with different types of ASICs.

2. a) What is basic principle of programmable logic devices? Explain?
b) How chips can be made programmable? State the various programming elements used in the PLDs?

3. a) What are the significances of design for testability in ASIC design flow? Explain in detail about automatic test pattern generation in testing.
b) Write short notes on the economics of ASICs.

4. a) Explain the categories of analogue ASICs.
b) State the analogue cell library components.

5. Explain in detail about the various commercial design tools for ASICs Design.

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) Explain the different steps involved in ASIC construction.
b) What are the goals and objectives of system partitioning?

8. a) Explain how interconnect delay is estimated.
b) Explain about the circuit extraction and DRC in ASICs.

CODE No.:10MT16101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

ADVANCED MATHEMATICS FOR COMMUNICATION SYSTEMS

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) We have four boxes. Box A contains 4000 components of which 5 percent are defective. Box B contains 1000 components of which 40 percent are defective. Boxes C and D contain 2000 each with 10 percent defective. We select at random one of the boxes and we remove at random a single component. Then what is the probability that the selected component is defective?

b) If the random variable x takes the values 1,2,3 and 4 such that 2P(X=1) = 3P(X=2) = P(X=3) = 5P(X=4). Find the probability distribution and cumulative distribution and cumulative distribution function of X.

2. a) Random variables X and Y have the joint density function

$$f_{X,Y}(x,y) = \begin{cases} (x+y)^2/40 & -1 < x < 1 \text{ and } -3 < y < 3 \\ 0 & \text{elsewhere.} \end{cases}$$

Find all the second-order moments of X and Y. What is the correlation coefficient?

b) For two random variables X and Y

$$f_{X,Y}(x,y) = 0.15\delta(x+1)\delta(y) + 0.1\delta(x)\delta(y) + 0.1\delta(x)\delta(y-2) + 0.4\delta(x-1)\delta(y+2) + 0.2\delta(x-1)\delta(y-1) + 0.5\delta(x-1)\delta(y-3).$$

Find the correlation coefficients of X and Y.

3. a) Explain the long term arrival rates and associated averages.

b) Let $W = X + Y + Z$, where $X, Y, \& Z$ are zero mean and unit variance RVs with $Cov(X,Y) = 0.25, Cov(Y,Z) = -0.25$ & $Cov(X,Z) = 0$.

(i) Find the mean and variance of W. Repeat (ii) assuming $X, Y, \& Z$ are uncorrelated.

4. a) State and explain the following terms:

(i) Strict sense stationary (ii) Wide sense stationary (iii) Cyclostationary random processes.

b) A random process (RP) $Z(t) = Xt + Y$ where $X,$ $\& Y$ are random variables with mean m_x and m_y and variances σ_x^2, σ_y^2 and correlation coefficient $\rho_{x,y}$.

Find the mean and auto covariance of $Z(t)$.

5. a) State and Prove wiener-Khinchin relations

b) A random process has the power density spectrum as $Y_{XX}(w) = \frac{8w^2}{1+w^4}$. Find the average power in the process.

6. State and prove the properties of Narrow band random process.

7. a) Show that the following autoregressive process is a Markov process:

$Y(n) + \gamma Y(n-1) + X(n), \quad Y(0) = 0$ *where* $X(n)$ is an iid process.

b) A critical part of a machine has an exponentially distributed parameter α. Suppose that 'n' spare parts are initially in stock, and let N(t) be the number of spares left at time 't'. i) find the transition probability matrix.

8. a) State and prove Jackson's theorem.

b) Arrivals at a telescope booth are considered to be Poisson with an average time of 2 min between one arrival and the next. The length of a phone call is assumed to be distributed xponentially with mean 4 min then

i) Find the average number of persons waiting in the system

ii) What is the probability that a person arriving at the booth will have to wait in the queue.

iii) Estimate the fraction of the day when the phone will be in use

CODE No.:10MT16102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

MODERN DIGITAL COMMUNICATION TECHNIQUES

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Give the relationship between impulse response and transfer function of a low pass and band-pass filters. Draw the necessary sketches.
b) A random process has a spectral density given by $S(f) = 10^{-4} \sin c^2 (10000f)$ V^2/Hz. Find the following parameters of the random process: (i) mean (ii) mean square value (iii) auto correlation function.

2. Explain memory less modulation in FSK and 16-QAM signals.

3. a) With the help of neat block schematic diagram, explain the working of a QPSK transmitter and receiver.
b) Qualitatively explain why M-ary QAM better noise performance than M-ary PSK for M > 8.

4. a) Write short notes on optimum detector for an AWGN channel.
b) Explain the properties of matched filter demodulator.

5. a) Explain the working principles of Linear equalizer with neat structure.
b) Discuss the decision-feedback equalizer with neat block diagram.

6. a) With suitable sketches and expressions, discuss about spreading and dispreading of PN signal.
b) Show that the modulo-2 addition of a sequence {1, 1, 1, -1, 1, -1, -1} with itself shifted by two positions is still a shifted replica of itself. How many places in this replica shifted?

7. a) Explain the following terms:
i) Acquisition; ii) Tracking; iii) Auto correlation.
b) Explain the concept of acquisition of an FH signal.

8. a) What is acquisition? How it is done by CELL-BY-CELL searching?
b) With neat block diagrams write about Delay-Lock loop analysis.

CODE No.:10MT16104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

COMPUTER COMMUNICATION NETWORKS

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish Between communication less and connection oriented services.
b) Give the characteristics of various types of Physical media.

2. a) Give overview about the DNS works.
b) Explain about web Caching.

3. a) What are the elements of Transport Layer?
b) Explain briefly about TCP protocol.

4. a) Describe three different types of switching fabrics commonly used in packet switches.
b) Explain Multicast routing using Group shared tree and Source based tree.

5. a) Explain the functions of Hubs, bridges and Switches.
b) Explain point to point protocol.

6. a) Write a Brief note on Integrated Services.
b) Explain Leaky Bucket Policing Mechanism.

7. a) Explain about Authentication protocol API.
b) Briefly describe symmetric key Cryptography.

8. a) What is Network management? Explain.
b) Explain about management information base.

CODE No.:10MT16105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

INFORMATION AND CODING TECHNIQUES

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) A DMS X has four symbols x_1, x_2, x_3, x_4 with probabilities $P(x_1) = 0.4$, $P(x_2) = 0.3$, $P(x_3) = 0.2$, $P(x_4) = 0.1$.
   (i) Calculate *H(X)*.
   (ii) Find the amount of information contained in the messages x_1, x_2, x_1, x_3 and x_4, x_3, x_3, x_2 and compare with the *H(X)* obtained in part (i).
   b) Consider a binary memoryless source *X* with two symbols x_1 and x_2. Show that *H(X)* is maximum when both x_1 and x_2 are equiprobable.

2. a) State and prove the properties of mutual information.
   b) Derive the channel capacity of binary symmetric channel with a symbol transmission error probability '*p*'.

3. State and prove channel coding theorem.

4. Derive the channel capacity of parallel Gaussian channel.

5. a) Explain about the Rate distortion function.
   b) Write about rate distortion function properties.

6. a) Encode channel with Reed-Solomon code for given message 0101101111.
   b) Distinguish between source coding and channel coding.

7. a) Encode channel with Reed-Solomon code for given message 010110111.
   b) How Reed-Solomon code will be encoded and decoded?

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 February - 2014

RADAR SIGNAL PROCESSING

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Derive general radar range equation.
b) Briefly explain about application of radar.

2. a) Explain about the efficiency of non-matched filters.
b) Explain in detail about the matched filter and correlation function.

3. With a neat block diagram explain in detail about Radar signal management.

4. a) How the quality of a radar signal may be assed by ambiguity function; explain.
b) Briefly explain about classes of ambiguity diagrams.

5. a) Explain about digital compression technique.
b) With a block schematic explain the characteristics of passive system.

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) Obtained the digital linear FM signal approximation for the poly phase coding.
b) Explain the procedure for the Costas codes.

8. a) Compare the different pulse compression waveforms based on their advantages and limitations.
b) What are the concerns with use of a limiter in pulse compression?

CODE No.:10MT16301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

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. a) Discuss the various steps involved in transferring a mail message.
b) Explain any two mail access protocols.

3. a) Explain record route and timestamp options in IP.
b) How is fragmentation and reassembly done in IP?

4. a) What is silly window syndrome? How is it solved?
b) How is congestion control done in TCP?

5. Explain the various congestion control and flow control mechanisms in TCP.

6. a) Why DNS uses distributed databases?
b) Explain how DNS works.

7. Explain in detail about TELNET.

8. a) What is use agent? What are the services of user agent?
b) Write about SMTP.

CODE No.:10MT16302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

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) Explain the Database Security levels.
b) What are the menaces faced while accessing databases?

2. a) State necessary and sufficient conditions in order that a multilevel relation R satisfies null integrity.
b) Describe Sea View model.

3. What are the most widely recognized models of access control? Explain any two access control models.

4. a) Describe the SQL GRANT / REVOKE statements for delegation of authority in a relational DBMS.
b) Draw a neat sketch showing 'Trusted Subject architecture' and explain it.

5. a) Explain the information leakages through covert channels and inference channels.
b) Discuss the security support offered in commercial database packages.

6. a) With reference to intrusion detection, distinguish between 'external parameters' and 'internal parameters'.
b) Discuss the basic reasons in favour of expert systems for intrusion detection.

7. a) What are the basic characteristics of an object-oriented database?
b) How is security enforced in the active database starbust?

8. a) What is the need for auditing? Explain the fundamentals about the Database Auditing.
b) Explain in detail about Hippocratic databases.

CODE No.:10MT16303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

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 Goals and Functions of Network Management Systems.
b) What are the top challenges in Managing the Networks?

2. a) What is network management model? Describe all models in detail.
b) Explain object and data types used in ASN.1 with examples.

3. Explain in detail about organization and Information models.

4. What are the enhancements made in SNMPv2? Explain the architecture of SNMPv2.

5. a) Explain in detail about Access Control.
b) Describe SNMPv3 management information base.

6. Explain in detail about RMON SMI and MIB.

7. Explain in detail about Standards and Management Architecture of TNM.

8. a) Briefly explain Reliable and fault Tolerant Network Management.
b) Write a short note on Distributed Network Management.

CODE No.:10MT20502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

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) What is data mining? Why it is important?
b) Explain the architecture of data mining system?

2. What is OLAM? Explain the architecture of OLAM.

3. a) What is Data Warehouse? Discuss the characteristics of Data Warehouse.
b) What is metadata? Discuss the components of Metadata Interchange Standard framework with neat diagram.

4. How can we mine multilevel association rules efficiently using concept hierarchies? Explain.

5. a) What is prediction? Explain about Bayesian classification.
b) Describe the decision tree induction.

6. Suppose that a power station stores data regarding power consumption levels by time and by region, in addition to power usage information per customer in each region. Discuss how to solve the following problems in such a *time-series database*.

i) Find similar power consumption curve fragments for a given region on Fridays.
ii) Every time a power consumption curve rises sharply, what may happen within the next 20 minutes?
iii) How can we find the most influential features that distinguish a stable power consumption region from an unstable one?

7. a) Explain similarity search, Multidimensional analysis of Multimedia Data mining.
b) Explain in brief about mining multimedia data on the web.

8. What are the major challenges faced in bringing data mining research to market? Illustrate one data mining research issue that, in your view, may have a strong impact on the market and on society. Discuss how to approach such a research issue.

CODE No.:10MT22504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

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 briefly about threats to software security.
b) Give a brief description about managing g secure software development.

2. a) Explain about the influential properties of secure software.
b) How to assert and specify desired security properties?

3. Discuss about
a) Requirements Elicitation
b) Requirements Prioritization

4. Give a brief explanation about security guidelines and attack patterns.

5. What is SDLC? What are different Security Testing Considerations throughout the SDLC? Explain.

6. a) Explain with example different Functional and Attacker Perspectives for Security Analysis.
b) Explain which software failures are more critical. Why?

7. Adopting an Enterprise Software Security Framework will provide better secure software. Explain.

8. What are the different problems encountered during security metrics?. Explain how to diagnose these problems.

CODE No.:10MT23803

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations February - 2014

DETECTION AND ESTIMATION OF SIGNALS

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the Neymen-Pearson criterion for detection of constant amplitude signals. Derive necessary relations.
b) A random variable X has density function defined by **fX(x)=5e-5x for 0≤x≤∞** find **E(X)** and **P(1≤X≤5)**.

2. a) Explain the importance of signal space diagram with suitable example.
b) If the signal set is $s_1(t) = \sqrt{E}\,\pi_1(t)$ and $s_2(t) = \sqrt{E}\,\pi_2(t)$. Design a matched filter. Find the probability of error as a function of **P{m_1}**.

3. What is Cramer Rao Bound? Derive the necessary relation for the bound. List out the Bound Asymptotic Properties.

4. a) With an example, discuss about maximum likelihood estimation.
b) Discuss about mean square error estimation.

5. Explain about Estimation in the presence of Gaussian Noise with Linear Observations.

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. a) Explain how ML estimator is used to estimate signal parameter 's'.
b) Consider a signal 'S' received in Gaussian noise. The signal is uniformly distributed between -S_m and S_m . Estimate S, using one sample **x_1=s+n_1**.

8. Write short notes on the following.
a) Bias and efficiency b) Maximum likelihood estimation

CODE No.:10MT10304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations September - 2014

IMMUNOLOGY

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. Differentiate between humoral and cell mediated immune responses.

2. Write a brief notes on structure and functions of secondary lymphoid organs and tissues.

3. Discuss about Primary and Secondary immune response.

4. Discuss about
   a) T - Cell receptors
   b) Macrophages
   c) Basic structure of immunoglobulin

5. Explain the principle, methodology and applications of Flow cytometry.

6. Write a note on:
   a) Structure and function of MHC molecules
   b) Diversity of MHC molecules
   c) GVH reactions.

7. Give an account of the development of immunity to bacterial infection.

8. Describe the mechanism of autoimmune diseases.

CODE No.:10MT10501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations September - 2014

COMPUTER ARCHITECTURE

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) Draw the logic diagram of 2 - to - 4 line decoder with only NOR gates. Include an enable input.
b) Draw and explain the state diagram of a binary counter.

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) List of various instruction set categories based on type of operation with an example.
b) The memory unit of a computer has 256 words of 32 bits each. The computer has an instruction format with five fields an operation code field, A mode field to specify on of seven addressing modes, Register address field to specify one of 64 processor registers and 2 memory address fields.
Design an instruction format and the number of bits in each field if the instruction is in one memory word for the above said specifications.

4. Stating your assumptions and showing by calculations, obtain an good estimate for an n - bit carry - look ahead adder
a) The total number of gates used
b) The circuit depth
c) Maximum gate fan in.

5. Discuss in detail about the super scalar architectures.

6. a) How many 128×8 RAM chips are needed to provide a memory capacity of 2048 bytes? How many lines of the address bus must be used to access 2048 bytes of memory? How many of these lines will be common to all chips? How many lines must be decoded for chip select? Specify the size of the decoders.
b) The access time of a cache memory is 100ns and that of main memory 1000ns. It is estimated that 80% of the memory requests are for read and the remaining 20% for write. The hit ratio for read accesses only is 0.9. A write-through procedure is used. What is the average access time of the system considering only memory read cycles? What is the average access time of the system for both read and write requests? What is the hit ratio taking into consideration the write cycles?

7. a) Distinguish between vectored interrupts and non-vectored interrupts.
b) State reasons, why to use I/O module at all, why not connect a peripheral directly to the system bus?

8. Write short notes on the following:
a) Hypercube interconnection b) Dynamic Arbitration algorithm.

CODE No.:10MT10502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations September - 2014

DISCRETE STRUCTURES AND AUTOMATA THEORY

[Computer Science]

Time: 3 hours **Max Marks: 60**

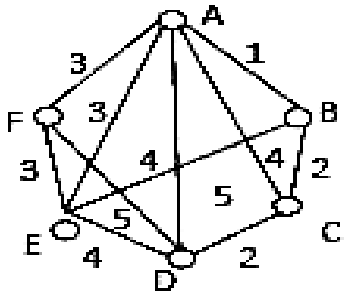
Answer any FIVE questions.
All questions carry equal marks.

1. a) Obtain the principle disjunctive and conjunctive normal forms of the following formula.
(P→(QΛR))Λ(¬P→(¬QΛ¬R))
b) Show that RΛ(PvQ) is a valid conclusion from the premises PvQ, Q→R, P→M and ¬M.

2. a) Show that a lattice is distributive iff
$(a * b) \oplus (b * c) \oplus (c * a) = (a \oplus b) * (b \oplus c) * (c \oplus a)$.
b) Let $X = \{2, 3, 6, 12, 24, 36\}$ and the relation $\leq$ be such that $x \leq y$ iff x divides y.
Draw the Hasse diagram of $\langle X, \leq \rangle$.
c) Let $f(x) = x + 2, g(x) = x - 2$, and $h(x) = 3x$ for $x \in R$, where R is the set of real number. Find $g \circ f; h \circ g; f \circ h; f \circ g \circ h$.

3. a) Find the number of distinct triples (x_1, x_2, x_3) of non negative integers satisfying $x_1+x_2+x_3<15$.
b) Solve the recurrence relation
$\mu_n - 7\mu_{n-1} + 16\mu_{n-2} - 12\mu_n = 0$.
$\mu_0 = 1, \mu_1 = 4, \mu_2 = 8$.

4. a) What is chromatic number of a graph? Find the chromatic number for K_5 graph.
b) Define Minimal Spanning Tree. Find the minimal spanning tree for the given graph.



5. a) With the help of schematic diagram, explain the function of DFA. What are the reasons to say it is deterministic?
b) Write a procedure to convert NFA to DFA.

6. a) Explain different closure properties of regular sets.
b) Construct left linear and right linear grammar for the regular expression **0*(1(0+1))*.**

7. State and explain about closure properties of Context Free Languages.

8. a) Design a TM to recognise all strings consisting of odd number of 1's.
b) State NP-complete problem. Give an example of NP-complete problem and explain.

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CODE No.:10MT10503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations September - 2014

DATA STRUCTURES AND ALGORITHMS

[Computer Networks and Information Security]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) Write a procedure to find the distance (i.e. no of nodes) between given two elements in the circular linked list.
b) Discuss applications of linked lists with examples.

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) Define Binary tree. List out binary tree traversal techniques and explain in detail.
b) Write applications of graphs.

4. Define B-Trees. What operations are performed on B-Trees? Explain with examples.

5. a) Start with an empty 2-3 tree and insert the keys 20,40,30,10,25,39,27,32,36,34, 35,8,6,2 and 3 in this order. Draw the 2-3 tree after each insert.
b) Define the different types of imbalances in the AVL tree with an example.

6. a) Explain merge sort. Define an algorithm for merge sort.
b) Explain divide and conquer strategy for matrix multiplication. Give necessary equations and explain strassen's matrix multiplication.

7. Explain the method of solving the knapsack problem using dynamic programming approach. Solve the knapsack problem with n=3, m=20, (p1,p2,p3)=(25,24,15) and (w1,w2,w3)=(18,15,10).

8. a) What is graph coloring problem?
b) Explain Backtracking approach for 8-Queens problem.

CODE No.:10MT10505

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations September - 2014

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) Consider the universal relation **R={A,B,C,D,E,F,G,H,I,J}** and the set of functional dependencies **F={AB→C, A→DE, B→F, F→GH, D→IJ}.** Assume no multivalues are present.
i) What is the key for R?
ii) Decompose R into 2 NF and then into 3 NF relations.
b) Prove or disprove the following inference rules for functional dependencies. Specify the name of the rule you use to derive the result.
i) **{ X→Y** and **Y** is a subset of **Z} |= {X→Z}**
ii) **{X →Y, X→W, WY→Z} |= {X→Z}**
iii) **{X→Y, Z→W} |= {XZ→YW}**

3. Identify the current Normal forms of the given tables and decompose the tables to attain 3rd Normal Form.

Employee

Emp Id	Emp Name	Salary	Department Id	Department Name
123	Sam	4500	4	SCSE
124	Ram	2000	5	SBST
125	Tom	6000	4	SCSE
126	Jeff	7000	5	SBST

Department Table

Department Id	Department Name	Location
4	SCSE	SJT
4	SCSE	TT
4	SCSE	M B
5	SBST	SMV

Project Table

Emp Id	Project ID	Hours	Emp Name
123	1	40	Sam
123	2	20	Sam
124	1	50	Ram
124	2	10	Ram

4. (a) Describe the circumstances in which you would choose to use embedded SQL rather than SQL alone or only general purpose programming language.
(b) Use the relations: emp(empno,ename,deptno,salary,designation)
empraise(empcode,raisesalary,raisedate)
Write a PL/SQL code for the employees to raise the salary for professor by 10% if salary is not more than Rs.100000/- if more than Rs.100000/- only 5% raise is given. In both cases maximum salary after raise is Rs.100000/-.

5. (a) Explain with example, the functionality of dynamic hashing. Also discuss how it is useful in DBMS.

(b) Construct B+ tree for the following set of key values

5 15 25 35 45

55 65 75 85 95 99

Assume that the tree is initially empty and values are added in ascending order where number of pointers that will fit in one node is four.

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 software modules of DDMS? Discuss the main functions of each of these modules in the context of the client server architecture.

(b) What is fragment of a relation? What are the main types of fragments? Why is fragmentation useful concept in distributed database design?

8. Discuss about:

a) Horizontal

b) Vertical and

c) Mixed fragmentation.

CODE No.:10MT13801

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations September - 2014

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) Determine the total solution for n3 *0* of the difference equation
$y[n] + 0.1y[n-1] - 0.06\,y[n-2] = 2^n\,u[n]$ with the initial conditions
$y[-1] = 1\ and\ y[n-2] = 0$.

b) Let $x[n]$ be a length-9 sequence with a DTFT $X(e^{jw})$ and it is given by
$\{x[n]\} = \{-2\ \ 4\ -1\ \ 5\ -3\ \ -2\ \ 0\ \ 4\ \ 3\}$. Evaluate the following expressions.

i) $X(e^{jw})$ (ii) $\int_{-p}^{p} \left| \frac{d\,X(e^{jw})}{dw} \right|^2 dw$

2. a) Name different types of linear - phase transfer functions and explain.
b) Explain what do you mean by algebraic stability test and check whether the following system is algebraically stable.

$$y(n) = x(n) + \frac{3}{4}x(n-1) + \frac{3}{8}x(n-2) + \frac{1}{8}y(n-1)$$

3. a) Develop a three multiplier structure of a digital sine-cosine generator obtained by setting **C** = $\cos\theta$ and $\alpha \sin\theta = \pm\beta$.
b) Write in detail about how to design IIR filters using pade's approximation.

4. Describe the decimation in time and decimation in frequency FFT algorithms in detail.

5. a) Let ***x(n)*** be periodic with periodicity matrix P. Let ***y(n)***denote the output of a down sampler with sampling matrix M and input ***x(n).*** Derive a necessary and sufficient condition for ***y(n)*** is to be periodic with $M^{-1}P$.

b) Let *X(z)* be the polynomial $X(z) = 1 + 2z^{-1} + 3z^{-2} + z^{-3}$. Determine the response *y*(*n*) of the system shown in Fig. 1, if $H(z) = 1 + 2z^{-1} + z^{-2}$

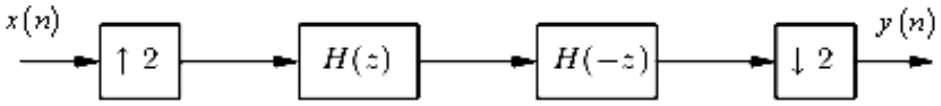


Fig-1

6. a) What is the need for spectral estimation? Explain power spectrum estimation using the Bartlett method.
b) Which power spectrum method, autocorrelation sequence is first windowed and then Fourier transformed to yield the estimation of power spectrum? Explain the method.

7. a) Derive the Yule Walker equation for the estimation of Auto-correlation from the random data.
b) Determine the autocorrelation $R_{xx}(n)$ of a random sequence $\mathbf{x[n] = A\cos(\omega_1 n + \Phi)}$, where **Φ** is uniformly distribute phase over **0 - 2π** interval.

8. Write short notes on the following:
a) Dual tone Multi-frequency signal Detection
b) Musical Sound processing

CODE No.:10MT15701

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations September - 2014

ANALOG IC DESIGN

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) Explain small signal modelling of single stage BJT amplifier with neat sketches.
b) Explain common source amplifier with current mirror active load.

2. a) State the limitations of single stage amplifiers.
b) Explain in detail the design and operation of cascade current mirror. Identify the limitations and suggest remedies.

3. a) Discuss current mirror with active load and explain how it can be used to process signals with the help of an example.
b) Deduce the lower and upper limits for the input common mode voltages of a differential amplifier using resistive load. Plot the small signal differential gain of a differential pair as a function of the input CM level.

4. a) Explain about latched comparator.
b) Explain how the gain is improved in folded cascade operational amplifier.

5. Explain the following switched capacitor circuits:
a) Full wave rectifier b) Peak detector

6. a) Deduce the best possible signal to quantization noise ratio for an uniformly quantized ADC.
b) A 100mv p-p sinusoidal signal is applied to an ideal 12-bit A/D converter for which $\mathbf{V_{ref}}$ is 5V. Find the SNR of the digitized output signal.

7. Explain R-2R based D/A converter and obtain its output voltage.

8. Draw the system architecture of delta - sigma A/D converters and explain the functionalities of each block.

CODE No.:10MT15702

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations September - 2014

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) Write a verilog descriptive of a module that uses language primitives to implement a four input NAND gate.
b) Write the binary equivalent of the following verilog numbers.
i) 8'h7 ii) 8'O36 iii) 8'b1010-0011 iv) 12 v) 8'bX vi) 6'h2E

2. a) Implement Full adder using half adder in verilog.
b) What are the different types of Reduction operators, logic operators? Explain with example.

3. a) Develop a Verilog code for four bit UP-DOWN counter.
b) What is mean by FSM? Explain block diagram of mealy model FSM.

4. a) Explain the synthesis of edge triggered Flip-Flops in Verilog with a suitable example.
b) Explain the synthesis of Gated Clocks in Verilog with a suitable example.

5. With suitable example, explain the synthesis of the following language constructs.
a) User Defined Tasks
b) Compiler Directives.

6. a) Discuss why switch level modeling is useful.
b) Write and verify a switch level model of a three inputs static CMOS NOR gate.

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 how VHDL is suitable for digital design. Also mention the differences between VHDL and Verilog .
b) Explain the MSI based design flow with the design of a sequential comparator.

CODE No.:10MT15703

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations September - 2014

DIGITAL IC DESIGN

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) Explain the different operating regions in Voltage Transfer Characteristics of CMOS inverter with suitable diagrams.
b) Explain the different operating regions of MOSFET.

2. a) What are all the technical characteristics that determine whether we have to choose static or dynamic logic? Explain.
b) Implement XOR gate using pass transistor logic.

3. a) What is the significance of voltage scaling for low power design? Explain.
b) What is the influence of switching activity on power consumption? Explain.

4. a) Explain the design considerations of Binary adder.
b) Design Barrel shifter and write some applications of it.

5. a) Design a 2-input NAND gate using BiCMOS structures.
b) Compare the BiCMOS Tecchnology and Bipolar Transistors.

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 the significance of sheet resistance and area capacitance in silicon NMOS.
b) Explain about the design rules for four physical masks in CMOS transistors.

8. a) Give a transistor level realization of ripple carry adder.
b) Design a serial multiplier that is capable of multiplying two eight bit numbers.

CODE No.:10MT15704

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations September - 2014

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. a) Explain any one of the hardware software synthesis algorithm with suitable example.
b) Discuss about distributed system co-synthesis.

3. Explain the roles and compare the following with respect to in-circuit emulation:
i) JTAG.
ii) OnCE.

4. Explain the target architecture for data-dominated systems.

5. a) Explain in brief, the compilation techniques available for embedded processor architectures.
b) Discuss about practical consideration in a compiler development environment with an example.

6. a) Explain how a typical simulation environment used for verification.
b) Explain the computational model, which uses extensively concurrency coordinating concurrent computations.

7. a) Write a short note on Hardware description languages.
b) What are the factors that are considered while selecting a specification language? Explain in brief.

8. Discuss how the design is specified, then compiled in to extended syntax graph in the COSYMA Co-synthesis flow for designing embedded systems.

CODE No.:10MT15705

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations September - 2014

VLSI TECHNOLOGY

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) Explain the fabrication steps of nMOS technology with neat diagrams.
b) What are the additional steps required for BiCMOS fabrication in addition to CMOS fabrication.

2. a) How body effect will depend on substrate doping? Explain the body effect on nMOS device.
b) Derive the pull-up to pull-down ratio for an nMOS inverter driven through one or more pass transistors.

3. a) What are the special rules for BiCMOS transistors? Explain them.
b) How to scale the current density, maximum operating frequency and gate capacitance?

4. How long wires are represented in terms of distributed RC effect and derive the delay equation.

5. Explain the left edge algorithm for channel routing with a pseudo code.

6. Explain the Level Sensitive Scan Design System used to test the sequential system with neat diagram.

7. a) Explain the routing of Switch box in Floor Planning.
b) Design output pad circuit and explain its working.

8. Explain the design methodology for IBM ASICS.

CODE No.:10MT15706

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations September - 2014

ASIC DESIGN

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) Explain the various stages of ASIC Design flow.
b) What is standard-cell? Explain how standard cells are used to design an ASICs with necessary diagrams.

2. a) Draw the architectural block diagram of PAL2V110.
b) Compare the performance of PAL with PLA. Is it possible to achieve equal performance capability for a given circuit.

3. a) Describe the programmable ASIC flow.
b) What is meant by technology mapping? Explain the technology mapping schemes for PLDs.

4. a) What is gate array based ASICs? Explain the types of gate array ASICs.
b) What are the significance of mixed mode and analogue ASICs. Explain the design methodology of mixed mode and analogue ASICs.

5. a) Compare logic schematic entry with the behavioral design entry.
b) Explain Xilinx design flow with help of flow chart.

6. a) State the importance of testing in ASIC Design. Write short notes on Boundary scan test.
b) Write short notes on Automatic test pattern generation.

7. a) Explain the Kerninghan-Lin algorithm for partitioning.
b) With the help of an example, explain the placement process.

8. a) Explain how interconnect delay is estimated.
b) Explain about the circuit extraction and DRC in ASICs.

CODE No.:10MT16101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Supplementary Examinations September - 2014

ADVANCED MATHEMATICS FOR COMMUNICATION SYSTEMS

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) State and prove baye's theorem of probability.
b) The number of arriving at a certain bank drive in window during any 10min period is Poisson random variable X with b=2. Find
i) the probability that more 3 cares will arrive during any 10 min period.
ii) the probability that no cars will arrive.

2. In a harbor ship arrive with a mean rate of 18 week. The harbor has 4 docks to handle unloading and loading of ships. The service rate of individual dock is 6 per week. The arrival rate and service rate follows poisson distribution. The maximum number if ships permitted in the harbor is 6. Find the standard results.

3. a) A discrete-time random process is defined by Xn = sn, for n ≥ 0 where s is selected at random from the interval (0,1). Find the cdf of Xn and joint cdf for Xn and also find the mean and autocavariance function of Xn
b) Define sample means.
c) Express the laws of large numbers.

4. a) Define random process, Explain in detail.
b) A process x(t) is MS integral, show that $\int_a^b x(t)dt = \lim_{\Delta ti \to 0} \sum_i x(t_i)\Delta t_i$.

5. a) Write the properties of power density properties
b) A random process has the power density spectrum as $Y_{XX}(w) = \frac{6w^2}{1+w^4}$. Find the average power in the process

6. a) State and prove the conditions for a Random process to be correlation ergodic.
b) Derive a relationship function between input and output power spectral densities of a linear time invariant system with the transfer function H (ω).

7. A machine consists of two parts that fail and are repaired independently. A working part fails during any given day with probability 'a'. A part that is not working gets repaired by the next day with probability 'b'. If X_n be the number of working parts in day 'n', (i) show that X_n is a three state Markov chain and give its one step transition probability matrix P. (ii) Show that the steady state pmf $\boldsymbol{\pi}$ is binomial with parameter $p = \frac{b}{a+b}$. (iii) What do you expect is steady state pmf for a machine that consists of 'n' parts.

8. State and prove Burke's Theorem.

CODE No.:10MT20301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

BIOREACTOR ENGINEERING

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the various types of bioreactors? Discuss in brief.
b) Write short notes on enzyme catalysis in CSTR and endogeneous metabolism.

2. Derive the equation for substrate consumption, cell productivity in chemostat.

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. Derive the expression for E-curve, F-curve and C-curve in residence time distribution studies.

5. Explain in detail the methods to measure the k_La**.**

6. a) How the cell damage can be minimized in animal cell bioreactors? Explain.
b) Write short notes on turbulent eddies and preventing vortex formation.

7. a) Discuss the direct regulatory control and cascade control mechanism in bioreactors.
b) Differentiate the online and offline monitoring of bioreactors.

8. Discuss the online sensors for cell properties.

CODE No.:10MT20302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

GENETIC ENGINEERING

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. Give an account on the scope and importance of genetic engineering.

2. Write an essay on nomenclature, specificity and applications of restriction enzymes.

3. Describe the structure of Ti plasmid and write about its application in agriculture.

4. What are artificial chromosomes? How are they constructed? Explain their uses.

5. Differentiate between a cloning vector and an expression vector. Describe about the essential features of an expression vector.

6. Write notes on DNA micro arrays and their applications.

7. Describe the importance of genetic engineering in the current fields of medicine and agriculture.

8. Write short notes on any two of the following.
   a) Transposon tagging.
   b) Gene silencing.
   c) Targeted gene replacement.

CODE No.:10MT20303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

BIOSEPARATION PROCESSES

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. Explain the selection of bio separation techniques and briefly describe about the bioprocess economics.

2. What is flocculation? Discuss about homogenizer.

3. Explain pretreatment of fermentation broth. Write about scale up of centrifuge.

4. What is double effect evaporation? Explain its steam economy.

5. What is membrane separation process and write about basic principles involved in it.

6. Write short notes on :
   a) Affinity chromatography.
   b) Philpot Electrophoresis.
   c) Ion- exchange chromatography.

7. What is the principle of chromatographic separation and explain about adsorption chromatography?

8. What are various types of industrial driers and explain criteria for selection of driers?

CODE No.:10MT20304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

CELL TECHNOLOGY

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. Explain the advantages associated with animal and plant tissue cultures.

2. Describe about the cell culture vessels and equipments that are commonly used and explain different sterilization techniques.

3. a) Which physicochemical properties do you follow while preparing the medium for cell lines and explain them briefly?
b) What are balanced salt solutions? Write three examples with its constituents.
c) What are antibiotics? What are the advantages and disadvantages in using in cell culture?

4. Explain the role of *oncogenes* and *oncoviruses* in cell transformation.

5. Define and explain the following:
a) Batch culture.
b) Continuous culture.
c) Senescence.

6. a) What is somatic cell hybridization?
b) What are the uses of somatic cell fusion?
c) Explain the production of monoclonal antibodies.

7. a) What is DNA transfer?
b) What are the different methods used to transfer the DNA into cells?
c) Explain transient transfection by lipofection.

8. Explain the techniques of isolation of pure clones.

CODE No.:10MT20305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

BIOINFORMATICS

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. What is a database? How do you classify biological databases based on their source of data and heterogeneity?

2. Explain various methods of nucleotide sequence analysis with examples.

3. Explain RNA secondary structure prediction.

4. Explain a) PAM 250.
b) BLOSUM 62.

5. Using bioinformatics tools, explain how you predict post-translational modifications of proteins.

6. Explain molecular dynamics.

7. Write a detailed note on analysis of the genome sequencing data with suitable examples.

8. Explain *in silico* primer design using one bioinformatics tool.

CODE No.:10MT20306

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

ADVANCED IMMUNOTECHNOLOGY

[Bio-Technology]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. What is idiotype? How does an idiotype vaccine function? Write an account on recombinant antibodies.

2. Explain the role of T-Cell subsets in cell mediated immunity.

3. What is immunological memory? How do T-Cell memory and B-Cell memory protect the host against recurrent infections?

4. Indicate the role and properties of adjuvants. Name a few adjuvants. Write an account on plant based adjuvants.

5. Explain how monoclonal antibodies are produced.

6. What are tumour antigens and explain categories of tumour antigens?

7. Explain the importance of Hybridoma Technology in Medicine.

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

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

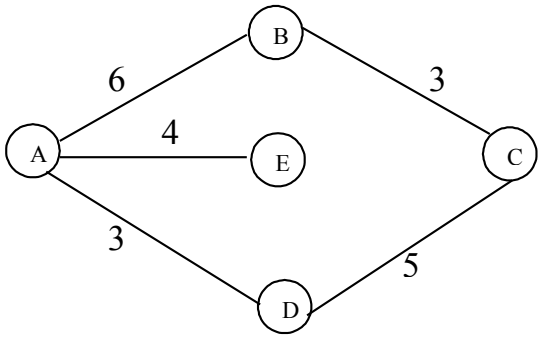
COMPUTER NETWORKS

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. Apply Dijkstra's algorithm for the given sample graph to realize the shortest path tree and give the routing table for Node A which is the root node.



2. Briefly explain the following:
- i) Role of SNMP and MIB
- ii) Advantages of IMAP over POP3

3. a) Give a brief note on classless addressing.
b) Explain the inter domain routing protocol using path vector routing.

4. a) Draw the TCP segment format and explain each field in detailed.
b) Give a brief notes on mobile transport protocol.

5. a) Give the overview of HTTP.
b) Explain the most popular mail access protocols.

6. Write notes on the following
- i. IEEE 802.11 wireless standards.
- ii. Wireless mesh networks.

7. a) Describe basic optical networking devices.
b) Write briefly about optical routers.

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

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

DATA WAREHOUSING AND DATA MINING

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) What are the major issues in data mining?
b) State and explain all the functionalities of data mining.

2. Briefly discuss the role of data cube aggregation and dimension reduction in the data reduction process.

3. a) With a neat sketch explain the architecture of a data warehouse.
b) Discuss the typical OLAP operations with an example

4. a) Explain *a priori* algorithm with an example.
b) Discuss the issues related to association rule mining.

5. What is a Decision Tree? Briefly explain the classification by Decision Tree Induction. Write the Decision Tree Algorithm.

6. a) Explain the categories of major clustering methods.
b) Write algorithms for *k*-means and *k*-medoids.

7. a) How frequent pattern mining is done in data streams?
b) Explain lossy-counting algorithm.

8. a) An E-mail database is a database that stores a large number of electronic mail messages. It can be viewed as a structured database consisting of mainly text database. Discuss the following:
i) How can such an E-mail database be structured so as to facilitate multi-dimensional search, such as by receiver, by subject, by time and so on.
ii) What can be mined from such E-mail database?
b) Discuss about mining Spatial database.

CODE No.:10MT20503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

JAVA AND WEB TECHNOLOGIES

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. Discuss about following:
   a) Data Abstraction.
   b) Data Encapsulation.
   c) Polymorphism.
   d) Inheritance.

2. a) Create a web page which contains timetable of your class.
   b) Describe about event handling in detail.

3. a) Write properties and methods of any two Javascript objects.
   b) Design a form with 3 text fields referring username, password, re-type password and submit button.

4. Discuss about DOM and SAX parsers.

5. a) Explain constrained properties of Java bean.
   b) Write the advantages of Java beans.

6. Describe about javax.servlet package.

7. Develop a simple employee portal using MVC architecture. Perform search operation by employee name. Write down the code for the JSP page, Controller and Persistence layer. The display of the search result should be in a table form.

8. a) Discuss in detail about the processing in JSP-JDBC connectivity.
   b) Explain four types of drivers in JDBC.

CODE No.:10MT20504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

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 information hiding.
b) Explain about principles of modeling.

2. a) List and explain the four adornments that apply to an association.
b) Enumerate the steps to model object structures.
c) Enumerate the steps to model reverse engineer of an object diagram.

3. a) Explain about instances.
b) Explain about an object diagram.

4. a) Explain the two types of sub states.
b) Enumerate the steps to model Inter Process Communication (IPC).
c) Enumerate the steps to model the context of a system.

5. a) Explain about library automation.
b) Explain about reverse engineering in component diagram.

6. What is unified process? Explain in detail about 4P's in software development.

7. a) Explain briefly about the inception phase.
b) Write about the architectural elaboration iteration workflow.

8. a) Explain about construction phase.
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 September - 2014

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) What are the differences between system calls and system programs?
b) What is Distributed system?

2. a) How do you represent a process?
b) What is the difference between thread and process? How thread scheduling is done?

3. Explain the state of the process Queue for the Readers / Writers problem and get the solution to the same by using message -passing.

4. a) Consider the following snapshot of a system of 5 processes and 4 resources.

Process	Allocation	Max.	Available
P0	0012	0012	1520
P1	1000	1750	
P2	1354	2356	
P3	0632	0652	
P4	0014	0656	

i. What is the content of the vector need?
ii. Is the system in a safe state? Verify with algorithm.
iii. If a request from processP1 arrives for (0 4 2 0) resources, can the request is immediately granted? Why? With the help of necessary algorithms explain all the steps.

b) What are the difficulties that may arise when a process is rolled back as the result of a dead lock?

5. a) What is critical section? What are the problems with critical section?
b) Write a solution to solve any critical section problem using semaphores.

6. a) What are preemptive and non-preemptive scheduling policies?
b) Describe non-preemptive scheduling policies

7. Write short notes on:
a) Sequential file.
b) Indexed file.
c) Indexed sequential file.
d) Direct file.

8. a) How clocks are synchronized in a distributed system?
b) Explain the Bully algorithm in distributed system.

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CODE No.:10MT20506

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

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. a) Briefly explain the evolution of cloud computing.
b) List the advantages and disadvantages of cloud computing.

2. What are APIs? How APIs work? Discuss various web APIs which are relevant in the cloud environment.

3. a) Discuss the components which make a cloud computing solution.
b) What is cloud storage? Discuss the risks of storing data in the clouds.

4. a) Explain the role of Distributed Management Task Force.
b) Explain different standards for messaging in clouds.

5. a) Explain the different security management policies to be adopted in cloud computing.
b) Briefly discuss on virtual machine security.

6. Discuss the role of basic public Internet in implementing cloud computing. Also discuss how the use of (i) Accelerated Internet (ii) Optimized Internet Overlay helps in better cloud implementation.

7. a) Explore different cloud based event management applications with an example.
b) Briefly explain the features of online calendar application with an example.

8. a) Illustrate how web based communication tools are used to collaborate online in clouds.
b) Explain web mail services with a suitable example.

CODE No.:10MT20701

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

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) Define cost curve of a fossil fired generator and explain how this curve is analyzed.
b) Explain the algorithm to determine economic dispatch by gradient method.

2. a) What are the constraints to be placed on the unit commitment problem?
b) Explain the forward dynamic programming approach and draw its flow chart.

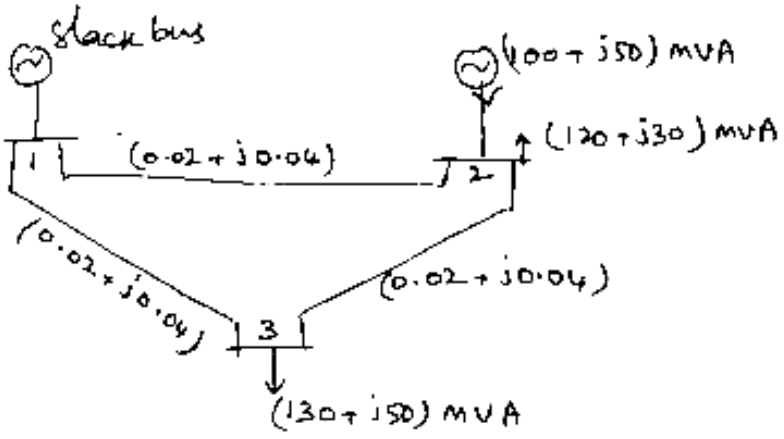
3. Describe the hydro-scheduling using linear programming and what are the constraints to be considered for simple hydro-scheduling.

4. Describe the load frequency control scheme of two areas connected through a tie line.

5. a) Discuss the inter utility energy evaluation.
b) What are the merits and demerits of power pools in interchange of power and energy?

6. The power system network shown in below figure. Bus-1 is considered as a slack bus of voltage is $1.0\angle 0^0$ p.u. The line impedances are indicated in the same figure on 100 MVA base values and neglecting the line shunt charging admittance. Determine the following after first iteration using gauss-seidal method

i) Voltage and phase angle at but 2 and 3
ii) Slack bus power
iii) Direction of line flows
iv) Line losses



7. a) Describe the bounding procedure for power system security.
b) Explain about the contingency selection.

8. a) Explain how optimal power flow is obtained using gradient method.
b) Explain about interior point algorithm.

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CODE No.:10MT20702

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

FACTS CONTROLLERS

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) Explain the importance of controllable parameters in the transmission system.
b) Explain the dynamic stability considerations of a transmission interconnection with necessary phasor diagrams.

2. a) Explain the transformer connections for 12-Pulse operation.
b) Explain the operation of Three-Level Voltage Sourced converter.

3. How the shunt compensators are useful for mid- point voltage regulation and voltage instability prevention? Explain.

4. a) Explain the operation and characteristics of FC-TCR.
b) Explain the functional control scheme of FC-TCR with necessary waveforms.

5. Explain in detail, the comparison between STATCOM and SVC.

6. Explain various objectives of series compensation.

7. Explain the various control attributes for different FACTS controllers.

8. Explain the basic control schemes for real and reactive power control using UPFC.

CODE No.:10MT20703

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

HVDC TRANSMISSION

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) Compare EHVAC and HVDC transmission.
b) Explain the advantages and disadvantages of HVDC transmission.

2. a) With a neat circuit diagram and waveforms, derive the expression for output voltage of 6 pulse bridge converter.
b) Obtain the equivalent circuits of rectifier and inverter operations of 6 pulse bridge converter.

3. a) Explain the various types of DC and AC filters.
b) Explain the harmonic instability problems.

4. Explain the following.
(a) Individual phase control.
(b) Equidistant pulse control.
(c) Equidistant firing angle.

5. a) Discuss about the different sources of reactive power in HVDC systems.
b) Explain the simultaneous method.

6. a) How power control is achieved in an MTDC system?
b) With V-I characteristics, explain the operation of two-rectifier, two-inverter MTDC systems.

7. a) Explain the voltage stability problems in HVAC / HVDC systems.
b) Write short note on remedies for instability problems.

8. a) Explain the over voltages in a converter station.
b) Write short notes on surge arresters.

CODE No.:10MT20704

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

POWER SYSTEM RELIABILITY

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. Discuss various basic probability rules for combinations of events.

2. a) What do you mean by MTTF? Derive an expression for MTTF of a Weibull system as a function scale and shape parameters.
b) Which of the following systems has the higher reliability at the end of 100 operating hours?
System 1: Two constant failure rate components in parallel each having an MTTF of 1000 hr.
System 2: A Weibull component with a shape parameter of 2 and a characteristic life of 10,000 hr in series with a constant failure rate component with a failure rate of 0.00005.

3. a) State and explain Baye's theorem.
b) Obtain an expression for reliability of the following non series-parallel network shown in Fig. 1 using minimal cut-set method, if the hazard rate of each unit is λ.

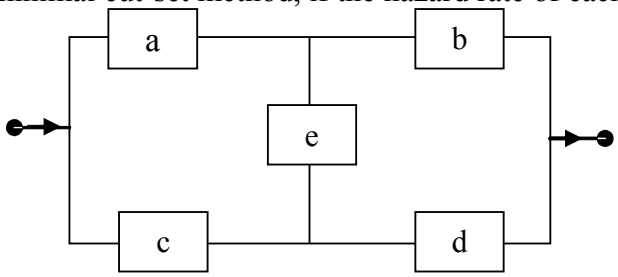

Fig. 1

4. The STPM of a discrete state system is given below

$$P = \begin{bmatrix} 0.5 & 0.2 & 0.3 \\ 0.3 & 0.4 & 0.3 \\ 0.2 & 0.2 & 0.6 \end{bmatrix}$$

i) Draw state space diagram
ii) Compute the LSPs of each state

If state 2 is an absorbing state then compute the number of time intervals that would have been resided by the other states before reaching to the steady state.

5. A generating station consists of two units of 40 and 60 MW with forced outage rates of **0.08** and **0.05** respectively. The MTTR of either unit is 20 days. Calculate LOLP, frequency of failure of the system, if it has to deliver a steady load of 50 MW. Assume exposure factor **e** = **0.5**/yrs.

6. a) Explain briefly
(i) Frequency and
(ii) Mean duration of a single component system
b) Draw and explain the state-space model of a Two component repairable model without identical components.

7. a) Explain the concept of two level load model for the probability analysis of combined generation and load model.

b) Explain the weighted average rate model for transmission system reliability analysis using weather effects.

8. A dual transformer single feeder network shown in Fig. 2 in which elements 1, 2 are transmission lines; 3, 4 are transformers; 5, 6 are bus bars; 7, 8, 9, 10 are circuit breakers. The reliability data for the components of the system is given in the table. Compute basic reliability indices of the system with:

i) No bus bar and circuit breaker failures

ii) Bus bar failures and no circuit breaker failures.

Using network reduction technique and FMEA.

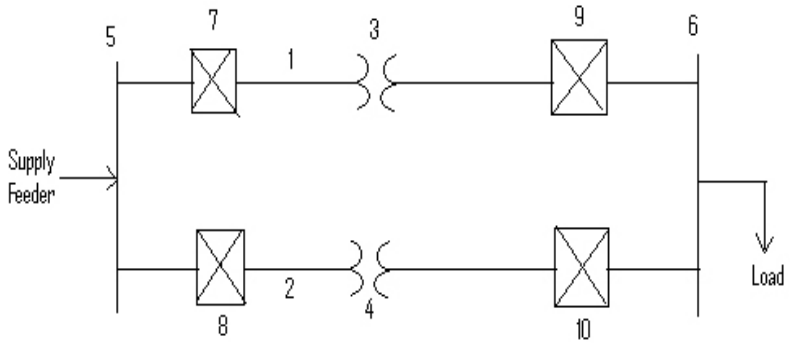

Fig. 2

Component	λ (f/yr)	r (hrs)
1	0.5	10
2	0.5	10
3	0.01	100
4	0.01	100
5	0.01	5
6	0.02	2

CODE No.:10MT20705

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

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. a) Discuss the advantages of static relays.
b) Discuss level detectors in static relays.

2. a) Explain instantaneous amplitude comparators.
b) Explain vector product type phase comparators.

3. a) Explain poly phase distance schemes.
b) Discuss phase fault schemes.

4. a) Explain the operation instantaneous over current relay.
b) Explain the operation of harmonic restraint relay.

5. a) Explain the effect of power swings on the performance of distance relays.
b) Discuss suitable distance protection scheme to overcome power swings problem.

6. With suitable block diagrams and flow chart, explain the operation of Microprocessor based Impedance relay

7. Describe how realization of MHO characteristics by using generalized mathematical model.

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 September - 2014

ENERGY AUDIT, CONSERVATION AND MANAGEMENT

[Electrical Power Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. Explain about medium term and long term energy conservation scheme in detail.

2. a) Explain the principle of energy management.
b) What are the reports that are to be generated by audit?

3. a) What are the guidelines an energy manger has to follow?
b) Discuss about the language of energy manger.

4. a) Discuss the effect of voltage change on the operation of Induction motors.
b) Explain the energy audit procedure for electric motors. A 3-phase induction motor of 25 hp is replaced with an energy efficient motor of same rating . Their efficiencies are 88% and 92% respectively. The motor operates for 5000 hours in a year. Find the payback period, if the costs of the two machines are Rs.25,000/- and Rs.31,500/- respectively. The unit cost of energy is Rs 4.50/ kW-hr.

5. a) Discuss about the location of the capacitors in transmission and distribution systems.
b) Write the effect of harmonics on power factor.

6. Explain about data loggers and write different applications of data loggers.

7. a) Why the replacement problem arises in the industry? How do you classify replacement problem?
b) The cost of a machine is Rs 6,100/- and its scrap value is only Rs 100/-.The maintenance costs are found from experience to be

Year	1	2	3	4	5	6	7	8
Maintenance Cost in Rs.	100	250	400	600	900	1250	1600	2000

When should the machine be replaced?

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 September - 2014

SERVICE ORIENTED ARCHITECTURE

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) How are services designed? Illustrate with example.
b) What is transition plan? Explain.
c) Give a note on OASIS.

2. a) Briefly explain message exchange patterns.
b) "An orchestration controls almost every facet of a complex activity" Substantiate the statement.

3. How to exchange metadata with SOA? Explain SOA security mechanisms.

4. a) Discuss common principles of service orientation in SOA.
b) Explain the interrelation between principles of Service Orientation and Object orientation.

5. a) Explain SOA delivery lifecycle phases with suitable diagrams.
b) Discuss service layer abstraction in SOA.

6. a) Make a comparison of service oriented architecture with service oriented environment.
b) What are the benefits of a business-centric SOA?

7. Discuss in detail the task-centric business service design process with a suitable example application.

8. What are the various languages used in business process design?

CODE No.:10MT22502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

SOFTWARE ARCHITECTURE AND DESIGN PATTERNS

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) Define software process and explain architecture activities.
b) What are the influences to and from architectures?

2. a) What are the uses of architectural documentation?
b) Explain seven parts of a documented view.

3. a) Explain different teams participation in ATAM.
b) Explain the outputs of ATAM.

4. Discuss about architectural mismatches.

5. Define design pattern? Explain how different design patterns are organized.

6. Explain implementation of Factory pattern.

7. Explain intent, motivation, applicability, structure and participants of Command pattern.

8. Discuss A-7E- a case study in utilizing architectural structures.

CODE No.:10MT22503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

SOFTWARE REENGINEERING AND REUSE

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. Explain in detail about Legacy Software structure and its distribution.

2. Explain about Business Process Reengineering.

3. a) What is software reengineering and give the details of its importance?
b) What are the major goals of software re-engineering?

4. When and why refactoring should be carried out and briefly explain the problems involved in refactoring?

5. Explain top ten of code bad smell.

6. a) Explain the forward engineering for Object Oriented Architecture.
b) Describe any two tools used for forward engineering.

7. a) Explain about Layered architecture.
b) Explain about Architectural Transformation.

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 September - 2014

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) What makes software secure? Explain.
b) Discuss maintaining and benefiting from assurance cases using suitable examples.

3. a) Draw the overview of several elicitation methods.
b) Briefly explain the SQUARE final results.

4. a) Draw the critical rules of Secure Software Architecture and Design.
b) Briefly explain software characterization in Architectural Risk Analysis.

5. List the two common methods for testing whether software has met its security requirements. Explain about them.

6. a) Explain system assembly challenges with respect to surety, security and complexity.
b) Describe the Attacker Behaviour in security failures.

7. How much security is enough in governance? Explain with examples.

8. Discuss about the perimeter security and threats in diagnosing problems.

CODE No.:10MT22505

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

SOFTWARE QUALITY ASSURANCE AND TESTING

[Software Engineering]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) Enumerate the components of software quality assurance.
b) What is CMM? Explain in detail.

2. a) List out the metrics for software maintenance.
b) Briefly discuss about the validation of software quality metrics.

3. What is the purpose of the identify software quality metrics and explain advantages and disadvantages?

4. Define the software testing and explain the different software testing types.

5. What are the eight considerations in developing testing methodologies? Explain briefly.

6. Illustrate cause-effect graphing, exception, histograms, JADs and Pareto analysis.

7. Explain the win runner, load runner, SQA robot, silk test, Jmeter and its advantages.

8. Briefly explain about testing of client/server systems.

CODE No.:10MT22506

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

INFORMATION RETRIEVAL SYSTEMS

[Software Engineering , Computer Networks and Information Security]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) Explain various components of Information Retrieval System.
b) How Information Retrieval System accomplishes its objective? Explain.

2. What are the different capabilities of Information Retrieval Systems? Explain with respect to the following:
a) Search.
b) Browse.

3. Explain the following :
a) Indexing by Concept
b) Indexing by term

4. a) How Signature File structure is used in Information Retrieval System.
b) Compare any two Stemming algorithms with detailed analysis.

5. a) Explain Probabilistic Weighting approach.
b) Discuss Simple Term frequency algorithm.

6. a) Explain the step by step process of clustering.
b) How automatic clustering is different from manual clustering. Explain.

7. a) Describe relevance feedback technique.
b) Write a detailed note on information visualization techniques.

8. a) How Information Retrieval Systems are evaluated? Explain.
b) What is URR metric? How do you measure URR? Explain with an example.

CODE No.:10MT23801

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

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. Write the properties of eigen values and eigen vectors and prove at least Two properties.

2. a) What is transversal filter? Explain it with suitable sketch.
b) Obtain Mean Square Error (MSE) expression for the transversal filter in terms of input correlation matrix and weight vector of the filter.

3. Write wiener Hopf equations with reference to adaptive filter theory and discuss the solutions of linear transversal filters.

4. Derive a discrete form of Newton's algorithm. Extend the algorithm to the multivariable case.

5. a) Explain the structure and operation of LMS algorithm.
b) Discuss briefly the concept of adaptive noise cancellation.

6. Explain the adaptive equalizer using neat block diagram.

7. Write the following:
a) Kalman filter based on one step prediction.
b) Computation of Kalman gain.

8. Sketch the block diagram of blind equalizer and explain it.

CODE No.:10MT23802

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

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) Explain the terms self information, entropy and mutual information.
b) Define Source - Coding theorem and explain the properties of codes.

2. a) List some key advantages of Huffman source coding.
b) Consider a data stream of 10101010…… (10 repeated 18 times) which is required to be coded using LZ coding algorithm. Show how the process of Lempel-Ziv encoding algorithm.

3. a) Explain the error detecting and correcting capability of linear block codes.
b) Generate the standard array for a (7, 4) Hamming code and use it to decode the received sequence (1,1,1,0,1,0,0).

4. a) What are Hamming codes? How many errors can be detected and corrected with the help of these codes? Explain with example.
b) What is hamming distance? What are the specifications of Hamming Code?

5. What are cyclic codes? What is a binary cyclic code? Discuss the features of encoder and decoder used for cyclic code using an (n-k) bit shift register.

6. a) Explain the convolution encodes with constraint length K and rate K/n.
b) Draw the tree representation of encoder with rate =1/2 and K=3.

7. Explain the sequential decoding algorithm with an example.

8. a) Determine the generator polynomial of the primitive BCH Codes of length 31. Use GF (2^5) generated by $\mathbf{P(x)=1+x^2+x^5}$.
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 September - 2014

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) Design the binary decision rule using probability of error criterion.
b) State and explain the principle used in Baye's test.

2. Derive the equation for matched filter receiver and show that it maximizes SNR.

3. Discuss the different properties of cost functions.

4. What is maximum likelihood estimator (MLE) and obtain MLE for observations in additive noise,

$$\mathbf{Y_i = \theta + n_i \quad , i=1,2,\ldots\ldots N}$$

Assuming that $\mathbf{n_i}$ are independent, identically distributed random variables with zero mean and variance $\boldsymbol{\sigma_n^2}$ and $\boldsymbol{\theta}$ is Gaussian, zero mean and variance $\boldsymbol{\sigma_\theta^2}$.

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. Derive the expression for linear minimum variance based on the first and second order moment.

7. Obtain the MAP estimate for the scalar parameter '$\boldsymbol{\theta}$' for the observation

$$\mathbf{y = \ln(\theta) + n}$$

where $\mathbf{P(\theta) = 1}$, $\mathbf{0 \le \theta \le 1}$
$= \mathbf{0}$, otherwise
where $\mathbf{P(n) = e^{-n}}$, $\mathbf{n \le 0}$
$= \mathbf{0}$, otherwise

8. Write short notes on the following:
a) Robust detection
b) Non-linear estimation

CODE No.:10MT23804

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

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) What is the need for speed and quality of service?
b) What are different Network Elements? Explain their functions.

2. a) Draw a comparison between the three B-ISDN access methods.
b) Discuss various similarities and differences between Frame Relay and ATM.
Explain the terms FECN and BECN. What is their significance in frame relay network?

3. a) Explain the following in ATM networks.
i. Virtual channels
ii. Virtual paths.
b) Explain the routing of a call using a VP switch in an ATM network.

4. What is the need for AAL in ATM networks? Draw the AAL frame format which supports:
i. Connection oriented data service.
ii. CBR services.
iii. VBR services.

5. Find the switch settings for an 8*8 benes network for each of the following destination permutations by looping algorithm.
5 2 4 0 7 6 3 1

6. a) What is a rearrangeable non blocking network? Explain.
b) Construct a 8-input benes network. Explain its operation and mention advantages.

7. a) What is buffer management? Briefly explain passive buffer management schemes with their merits and demerits.
b) Describe Header formats of TCP, UDP and IP .

8. a) What are the draw backs of passive queue management schemes? Explain with examples.
b) Compare Differentiated and Integrated services with examples.

CODE No.:10MT23805

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

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 how a cellular telephone call is made in cellular systems.
b) List out some important wireless communication systems and discuss about them briefly.

2. a) Describe the free space propagation model and deduce the expression for received power.
b) A receiver is located 10 km away from a 50 W transmitter. The carrier frequency is 900 MHz, the free space propagation is assumed. The gain of the transmitting antenna is unity, and the receiver antenna gain is 2.
Find (i) the power at the receiver,
(ii) the magnitude of the electric field at the receiving antenna,
(iii) the R.M.S voltage applied to the receiver input assuming that the receiver antenna has a purely real impedance of 50 ohms and is matched to the receiver.

3. a) Explain in detail about impulse response model of a multipath channel.
b) Discuss in detail about parameters of a mobile multipath channels.

4. a) Explain about Frequency diversity.
b) Discuss performance analysis for Rayleigh fading channels.

5. a) Explain channel planning for wireless systems.
b) Discuss in detail about cell sectoring technique.

6. a) Explain CDMA.
b) Explain Frame and Super Frame.

7. Write the following:
a) MIMO for flat fading channels.
b) Capacity of MIMO systems.

8. Write the following:
a) CDMA-2000.
b) Signal Processing in GSM.

CODE No.:10MT23807

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

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 in detail the various components of a typical Image Processing workstation.
b) Discuss in detail the differences between Gray scale Colour images.

2. a) Discuss in detail about KL transform with an example.
b) What is histogram of an image? Explain histogram equalization.

3. a) Explain restoration process of images using inverse filtering approaches.
b) Explain about Wiener filtering approaches.

4. Differentiate between Bi-level thresholding and multi-level thresholding. What is Adaptive thresholding?

5. Define the term image coding and its need. Name various image coding techniques and compare and contrast the transform coding from predictive coding technique.

6. a) What is called *lossless compression* in image processing? Give applications where lossless image compression is used.
b) Explain about run length coding.

7. a) What is Spatio-temporal sampling in video processing? Explain in detail.
b) Explain the process of Representation of Digital Video.

8. Discuss about various Video Filtering approaches in detail.

CODE No.:10MT23808

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

OPTICAL COMMUNICATIONS

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) With reference to optical transmission, explain the significance of the terms :
i) Radiation modes and Leaky modes.
ii) Cut-off condition and Cut-off wavelength.
iii) Coupled modes and Mode mixing.
b) Account for the different types of refractive index profiles needed for optical fibers, and compare their features.

2. a) Explain how to determine the mode field diameter of a single mode fiber.
b) Why silica-based glass material is most widely used for fibers?

3. List out the specific requirements of optical fiber cables. Explain the significance of the terms :
i) Fiber splicing and types of splices used.
ii) Fiber connectors and losses involved.
iii) Cable structural strength and sheath provision.
iv) Fiber end-face preparation.
v) Source-to-fiber couplings.

4. a) Mention the specific requirements of optical sources used in optical fiber transmission. Comment on the features: Spontaneous Emission and Stimulated Emission.
b) Compare the basic principle of working and merits of PN and PIN photo diodes.

5. a) Derive the expression for the power transfer function of the Fabry -Perot filter.
b) Explain how a four-wave mixing in a semiconductor optical amplifier is used for wavelength conversion.

6. a) How Eye diagram is used to determine the goodness of the received signal?
b) Show that the BER for an on-off keying direct detection receiver is given by

$$BER = Q\left(\frac{I_1 - I_0}{\sigma_0 + \sigma_1}\right)$$

7. a) Distinguish between HFC and FTTC architectures. Explain their characteristics.
b) Distinguish between TDM and WDM approaches. List out their 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 September - 2014

ALGORITHMS FOR VLSI PHYSICAL DESIGN AUTOMATION

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Compare the different design styles of VLSI design.
b) Find the minimum spanning tree for the given connected graph shown in figure (1) using Prim's Algorithm.

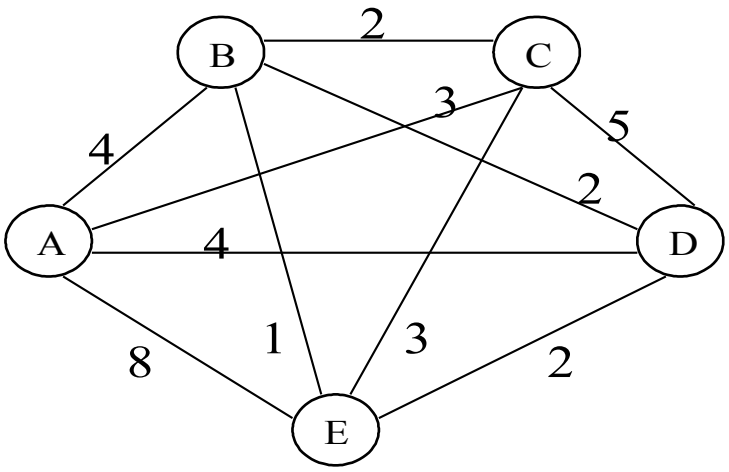

Figure (1)

2. a) Discuss the NP-Completeness and NP-hardness problems in design automation.
b) Write a short note on Genetic algorithms for optimization problems.

3. a) What is layout compaction? Explain the restrictions used in fabrication of an IC.
b) What is routing problem? How it is performed? Discuss the types of routing problems.

4. a) What is simulation? What are the components of a simulation?
b) Explain about compiler-driven and event-driven simulation.

5. Write a short note on the following:
a) Delay Models.
b) Switch level modeling.

6. a) Explain hardware models for high-level synthesis.
b) Write any two of the scheduling algorithms.

7. a) How MCM partitioning is carried out? Explain it with a system graph.
b) Explain the MCM physical design cycle with neat sketch.

8. Explain the MCM physical design cycle with neat sketch.

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CODE No.:10MT25702

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

CPLD AND FPGA ARCHITECTURES AND APPLICATIONS

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) Describe the features of Altera FLEX logic-1000 series CPLDs.
b) Describe the salient features of Cypres FLASH 370 Device technology.

2. a) Why SRAM based FPGAs are popular when compared to other types? Explain.
b) Discuss about the technology mapping for FPGAs.

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) What is state machine chart? How it is used?
b) Realize the state machine chart for dice controller.

5. a) Perform the state machine design using the universal shift register as the memory. Draw the symbolic block diagram, state diagram and relevant operational table.
b) Illustrate one-hot state machine architectural method with proper example.

6. a) Explain the datapath and functional partition of FSM system level design.
b) Develop one hot state diagram for a sequence checker whose output is '1' whenever the sequence 0101 is detected. Also specify the Transition Table.

7. Design encoder FSM, whose state transition table has current state 000, 001, 010, 01, 100, 101, 110, 111 and next state 001, 010, 011, 100, 110, 111, 000 respectively. Implement the design on Xilinx XC 4000 FPGA.

8. Perform the design, development and implementation of 4-bit parallel adder using CPLD. 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 September - 2014

DIGITAL SYSTEM TESTING AND TESTABILITY

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) Explain in detail structural modeling of digital circuits (external and internal representations).
b) Explain various levels of simulation in brief.

2. a) What is parallel fault simulation? Explain it with suitable example.
b) Define the terms.
i) Fault equivalence
ii) Fault dominance

3. a) Compare D- algorithm, 9V algorithm and PODEM used for ATG.
b) Differentiate between random TG and deterministic TG.

4. a) Differentiate between isolated and integrated scan designs.
b) Explain various ad-hoc design techniques for testability.

5. Describe the ad-hoc testing and scan based approaches to design for testability in detail.

6. a) Briefly explain the board level self-test technique with neat diagram.
b) Explain the cyclic analysis testing system (CATS) based BIST architecture.

7. a) Write a brief note on memory test architectures and techniques.
b) Explain in detail testing techniques for RAM.

8. a) What is JTAG? Explain its features.
b) Write short notes on embedded core testing.

CODE No.:10MT25704

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

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) Threshold voltage (ii) Scaling.
b) Write notes on Silicon-On-Insulator technology.

2. a) Illustrate the realization of low-cost, medium- speed, 5-V digital BiCMOS process with neat sketch.
b) Give the process sequences for a high-performance oxide-isolated bipolar transistor. Also draw the cross section of a transistor fabricated using the CDI process.

3. How to get low capacitance in Bipolar / BiCMOS process. Explain with diagrams.

4. Derive I - V and Capacitor characteristics of n - MOSFET in all operating regions.

5. Explain following advanced MOSFET model parameters
i) Current Model
ii) Charge Model
iii) Noise Model.

6. a) Explain different power dissipation in CMOS logic.
b) Design and explain the BiCMOS NAND gate.

7. a) Draw the diagram of ESD-free BiCMOS digital circuit and explain its operation.
b) Elaborate how a high-speed electrostatic discharge free BiCMOS circuit eradicates the need for input protection circuits.

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 September - 2014

SCRIPTING LANGUAGE FOR VLSI DESIGN AUTOMATION

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) Explain the importance of using PERL language which is popularly used as scripting language over other available scripting languages.
b) Explain how to process a list using PERL programming. Consider an example.

2. a) Explain the significance of Unary and Binary operators used in PERL programming. Illustrate these operators with suitable examples.
b) Implement an algorithm and relevant PERL program to create and print a Hash and to merge two Hashes.

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) State the pattern modifiers of PERL with an example.
b) Explain task that is done by the following patterns.
M{\W+:(\s+\w+)\s*\d+}x;.

5. a) Explain character classes of PERL with an example.
b) State the operation of the following regular expression. Explain.
S/\s*$//gm.

6. a) Present the Debugger Commands used in PERL language. Briefly explain them.
b) Illustrate the Debugger support in PERL Programming with relevant example.

7. a) Explain the PERL profiler.
b) State the inter-process communication in PERL.

8. a) Explain Process Model and Thread Model.
b) Explain compiling and execution procedure of PERL code.

CODE No.:10MT25708

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

REAL TIME OPERATING SYSTEMS

[VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) Explain in detail fork function with a program to demonstrate it.
b) State the purpose of signals. Describe in what ways process handles the signal.

2. a) Describe a reference model of real time systems.
b) Explain processors and resources of real time systems.

3. Explain different parameters of a job that characterizes an application.

4. Explain EDF algorithm with an example.

5. Explain the basic functions of operating system in detail.

6. a) Briefly describe various fault types.
b) Describe various ways to determine malfunctioning of processor.

7. a) Explain the process scheduling in Vx Works.
b) Explain the memory management in Vx Works.

8. a) Briefly explain clock and timers in RT Linux.
b) Describe in detail interrupt management for RT Linux.

CODE No.:10MT26102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

DIGITAL SATELLITE COMMUNICATIONS

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) Define and explain digital speech interpolation.
b) The total traffic at an earth station is 1151 erlangs, and the required blocking probability for any destination is 0.01. Find the required number of channels if the earth station employs per-call demand assignment.

2. a) With the help of the diagrams discuss the principle of operation of slotted aloha scheme, mention its advantages and limitations?
b) Write a short note on packet reservation.

3. a) Write short notes on Noise Performance in MPSK.
b) Explain the Principle of Operation in Phase Locked Loop.

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) Explain Polling VSAT Network.
b) Explain CDMA MSAT Network.

6. a) What are the two principle effects that radiation on electronic equipment? What particles cause this effect?
b) Write a short note on elevation angle considerations.

7. a) Explain Off-Axis Scanning.
b) Write short notes on End-to-End System Implementation.

8. a) Explain the operation of DBS-TV receiver with the help of block diagram.
b) Write a short note on DBS-TV antenna installation.

CODE No.:10MT26105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

RF SYSTEMS AND CIRCUITS

[Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) What are Planar Transmission lines?
b) Show that a transmission line will be distortion free if **CR = LG**.

2. a) Calculate the width and length of a micro strip line for a **50 Ω** characteristic impedance and a 90^0 phase shift at **2.5** GHz. The substrate thickness is d = 0.127 cm , with $\varepsilon_r = 2.20$.
b) Find the width for a **50 Ω** copper strip line conductor, with b = 0.32 cm and $\varepsilon_r = 2.20$. If the dielectric loss tangent is 0.001 and the operating frequency is 10 GHz. Calculate the attenuation is dB / **λ**. Assume a conductor thickness of **t** = 0.01 mm.

3. a) Write impedance and admittance matrices for N-port microwave network. Explain.
b) What is the importance of stub matching in RF transmission line? What is the advantage of double stub over single stub?

4. a) Describe the formation of Smith Chart through its mathematical foundation.
b) Briefly explain about quality factor Q of microstrip line.

5. a) What are SPST and SPDT switches?
b) What are loaded line phase shifters in microstrip?

6. a) What is spur line band stop filter?
b) What is parallel coupled band pass filter?

7. a) Explain MEMS fabrication process.
b) What are the advantages of MIC, MMIC, MEMS technologies?

8. a) Explain the principle of operation of ratio detector.
b) What is quadrature detector?

CODE No.:10MT26301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

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 the various challenges faced while designing the secure protocols?
b) What is Cryptography? How cryptography can be used in the design of secure protocols?

2. a) Let M1 be the bitwise complement of M. If the complement of plaintext block and key is taken, whether the result of encryption has any impact? Prove your answer.
b) Compare MD5 and SHA-1 hash algorithms.

3. With neat diagrams, explain various modes of DES algorithm.

4. Write note on the following:
a) The PRP/PRF switching lemma.
b) PRP under CPA.
c) Provably secure Pseudo-Random generators.
d) Universal hash based MACs.

5. In Private Key encryption explain the various plaintext attacks.

6. a) What are provably secure pseudo-random number generators? Explain with examples.
b) Explain Trapdoor functional model.

7. Explain the following:
a) Cryptography based on integer factorization.
b) Discrete logarithms.
c) PRF as a MAC paradigm.
d) One time pad encryption technique.

8. a) 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 September - 2014

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 are the various network security principles?
b) Discuss about the network monitoring techniques.

2. Discuss about various implementation options of defensible network architecture.

3. a) List and briefly explain about the traffic threat assessment assumptions
b) What is PCI port aggregator tap? Discuss about its deployment.

4. a) Write in detail the Digital Signature by illustrating how signing and verification is done using DSS.
b) Explain the algorithm of DES in brief.

5. a) What is an attack? Discuss about the characteristics of attacks.
b) Define the terms: *worm, virus, Trojanhorse* and *firewall*.

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. Discuss about the categories of IPS sensor network traffic analysis.

8. Describe in details as how the PGP provides confidentiality and authentication services for E-mail applications in Internet.

CODE No.:10MT26303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2014

WIRELESS NETWORKS

[Computer Networks and Information Security]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions.
All questions carry equal marks.

1. a) Explain first, second and third generation's wireless systems and services.
b) Write a note on
i) Wireless LAN
ii) Wireless MAN
iii) Wireless PAN

2. a) Write the difference between hard and soft handoff.
b) How many keys are required for secure communication among 1000 person if
i) Symmetric key encryption algorithm is used
ii) Asymmetric key encryption algorithm is used

3. Explain the Digital Signature and illustrate how signing and verification is done using DSS with relevant examples.

4. a) Give the relative advantages of MMDS compared to LMDS.
b) Explain in brief about various wireless applications.

5. a) Explain Encoding techniques in mobile communication systems.
b) Write a brief note on
i) AMPS ii) GSM

6. a) What are the solutions for wireless environment in TCP over Wireless?
b) Distinguish between IPv4 and IPv6.

7. Explain the difference between hard and soft handoff.

8. Explain the following
a) Wireless Sensor Networks
b) Secured communication in sensor Networks

CODE No.:10MT26307

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Supplementary Examinations September - 2014

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 Message Queue? Explain the functions used to create, send and receive messages using a Message Queue with syntax.
b) What is a Name Space? Explain about ftok( ) function.

2. a) Explain TCP Connection Release in detail.
b) Explain about the Buffer Sizes and their limitations that affect the IP datagrams.

3. a) Explain the Byte Ordering and Manipulation functions with syntax.
b) Explain TCP Connection establishment with Connect( ) function.

4. Give the TCP echo server program including utility functions.

5. a) Write a short notes on Shutdown( ) function.
b) Explain the following Socket options.
i) SO_BROADCAST
ii) SO_KEEPALIVE
iii) SO_LINGER

6. Design a method to handle lost UDP datagram at application level. Explain its working with suitable program statements.

7. a) Explain about the working of gethostbyaddr function using suitable diagrams.
b) Write a code segment to display the details returned by uname function.

8. Write short notes on:
(i) Terminal modes.
(ii) Steps of RPC.

CODE No.:10MT20503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Supplementary Examinations February - 2014

JAVA AND WEB TECHNOLOGIES

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. How threads are created using Runnable interface and Thread class? Explain with example.

2. a) What is an applet? Explain about AWT programming.
b) Describe about handling swing controls with examples.

3. a) Write properties and methods of any two java script objects.
b) Design a form with 3 text fields referring username, password, re-type password and submit button.

4. What is XML schema? Explain with examples.

5. a) Explain the following classes and their usage.
i) BeanDescriptor
ii) EventSetDescriptor
iii) PropertyDescriptor
b) Explain indexed properties of java beans with an example.

6. a) Describe about the life cycle of servelet.
b) Write a servelet code which can read parameters from a web page.

7. a) Discuss about MVC architecture.
b) What is Scriptlet? Explain about Scriptlet elements.

8. a) Write a sample java program to connect a database using JDBC.
b) Discuss about JDBC drivers.

CODE No.:10MT23801

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Supplementary Examinations February - 2014

ADAPTIVE SIGNAL PROCESSING

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Prove that the eigen vectors of a correlation matrix of a discrete stochastic process are orthogonal to each other.
b) State and explain Min-Max theorem.
c) Give the application of Low-rank modeling.

2. a) State the term 'Adaptive system'. Give at least two suitable examples for the system.
b) List out some of the applications of adaptive system.
c) Discuss about gradient and minimum mean square error.

3. a) With reference to the Wiener filters, state and explain the principle of orthogonality.
b) Give the solution of the Wiener -Hopf equations for linear transversal filters using matrix formulation.

4. Consider a Wiener filtering problem characterized by the following values for the correlation matrix R of the tap-input vector u(n) and the cross-correlation vector P between u(n) and the desired response d(n).

$$R = \begin{bmatrix} 1 & 0.5 \\ 0.5 & 1 \end{bmatrix} \quad P = \begin{bmatrix} 0.5 \\ 0.25 \end{bmatrix}$$

a) Suggest in suitable value for the step-size parameter μ that would ensure convergence of the method of steepest descent, based on the given value for matrix R.
b) Using the value proposed in part (a), determine the recursions for computing the elements $w_1(n)$ and $w_2(n)$ of the tap-weight vector w(n). For the computation, you may assume the initial values $w_1(0) = w_2(0) = 0$.

5. a) Explain LMS Algorithm for estimation of gradient vector.
b) Explain how LMS Algorithm is used in as Adaptive line enhancer with the help of a block diagram and corresponding waveforms.

6. a) Draw the suitable diagram for implementing Recursive Least Square (RLS) algorithm in adaptive equalization and explain the process of equalization.
b) Establish the validity of the matrix inverse lemma.

7. a) Give the representation of Riccati equation solver signal flow representation and explain.
b) Explain Information filtering algorithm, a variant to Kalman filter with the help of equations.

8. For perfect equalization, the equalizer output $y[n]$ be exactly equal to the transmitted data $x[n]$. Show that when Bussgang algorithm has converged in the mean value and perfect equalization has been attained, the non-linear estimator must satisfy the condition $E\left\{ \bar{x}[n] g\left(\hat{x}[n] \right) \right\} = 1$, where $\hat{x}[n]$ is the conditional mean estimate of $x[n]$.

CODE No.:10MT23805

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Supplementary Examinations February - 2014

WIRELESS COMMUNICATIONS

[Digital Electronics and Communication Systems]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain how a cellular Telephone call is made in cellular systems.
b) List out some important wireless communication systems and discuss about them briefly.

2. a) Derive the equation for power received in free space propagation models.
b) Explain knife- edge diffraction model.

3. a) Discuss impulse response of multipath channel model.
b) Explain in detail Parameters of Mobile multipath channels.

4. a) Explain the method of improving coverage area and capacity in cellular system.
b) Determine the number of Cells in the cluster and locate the Co-channel cells j=2 & i=3.

5. a) Prove that for a hexagonal geometry, the co-channel reuse ratio is given by = $\sqrt{3N}$, where $N = i^2 + j^2 + ij$, and **'i', 'j'** are non-negative integers.
b) A cellular phone owns 100 cell sites and 20 is the traffic intensity per cell with a bandwidth of 30 kHz. Assuming each user makes three calls per hour and average holding time per call is 4 minutes; determine the total number of subscribers that the service provider can support with GOS of 0.02.

6. a) Give the comparison between FDMA, TDMA, and CDMA with suitable examples.
b) Discuss about Near-far problem and Power control in Cellular CDMA systems.

7. a) Explain Capacity of frequency flat deterministic MIMO channel.
b) Compare Space time signal Models.

8. Explain Forward and Reverse CDMA channels in IS-95.

CODE No.:10MT26303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC10) Supplementary Examinations February - 2014

WIRELESS NETWORKS

[Computer Networks and Information Security]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain in detail cellular system characteristics, fundamentals and infrastructure.

2. a) Explain in brief about IP Security Architecture.
b) What are the key differences between first and second generation cellular system?

3. Explain the Digital Signature and illustrate how signing and verification is done using DSS with a relevant examples.

4. a) Explain any two Classical Encryption Techniques briefly.
b) In a typical mobile IP implementation in a foreign agent, the agent maintains a visitor table that contains information about the mobile nodes currently visiting this network. What entries are essential for each row of the table?

5. a) Explain Encoding techniques in mobile communication systems.
b) Write a brief note on
i) AMPS ii) GSM

6. a) What are the solutions for wireless environment in TCP over Wireless?
b) Distinguish between IPV4 and IPV6.

7. a) Distinguish between broadcasting, multicasting and Geocasting.
b) Describe the solution for TCP over Adhoc networks.

8. a) List and briefly define different performance metrics that may be used to make the handoff decision.
b) Give the difference between hash and message authentication code.

CODE No.:10MT26307

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Supplementary Examinations February - 2014

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 Message Queue? Explain the functions used to create, send and receive messages using a Message Queue with syntax.
b) What is a Name Space? Explain about ftok( ) function.

2. a) Explain the layers of OSI Reference Model in detail with a neat sketch.
b) Explain TCP Connection Termination.

3. a) Explain the Socket Address Structures for IPv4 and IPv6.
b) Explain the various exec( ) functions with examples.

4. a) Explain the Pre-mature Termination of TCP Server with sample code.
b) Give the syntax of signal( ) function and write sample code to handle SIGCHLD signal.

5. a) Explain about the following I/O models
i) signal driven I/O and ii) asynchronous I/O.
b) Write about any six IP level IPv4 socket options.

6. Design a method to handle lost UDP datagram at application level. Explain its working with suitable program statements.

7. a) Explain about different types of DNS resource records.
b) Write about the functionality of getservbyname and getservbyport functions.

8. Write short notes on
a) Terminal modes.
b) Steps of RPC.