SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
I B.Tech (SVEC10) Regular/Supplementary Examinations May - 2012
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) Explain and deduce Bragg's law in X-ray diffraction. Give an account of powder method of crystal structure.
    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) Discuss on the Kroning-Penny model for the motion of electron in a periodic potential.
    b) How does the band theory of solids lead to the classification of solids into conductors, semiconductors and insulators?

3. a) What is a semiconductor? Explain p-type and n-type extrinsic semiconductors.
    b) With suitable examples, explain the direct and indirect band gap semiconductors.

4. a) Write on piezoelectricity and its applications.
    b) Elaborate on different types of magnetic materials.

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

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

7. a) Explain the phenomenon of total internal reflection.
    b) What is meant by numerical aperture? Explain its significance.
    c) Mention a few applications of Holography.

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

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I B.Tech (SVEC10) Regular/Supplementary Examinations May - 2012

ENGINEERING CHEMISTRY

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

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

Answer any FIVE questions
All questions carry equal marks

1. Discuss in detail various properties of lubricants.

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

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

4. a) Explain the corrosion of metals due to concentration cell.
   b) Describe how electro-less plating of nickel is carried out? Mention the chemical equations involved.

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

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

7. Describe the principle and applications of Atomic Absorption Spectroscopy.

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

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CODE No.:10BT1BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE
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I B.Tech (SVEC10) Regular/Supplementary Examinations May - 2012
ENGINEERING MATHEMATICS
[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Electronics and Control Engineering, Computer Science and Systems Engineering]

Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

1. a) Solve $y \log y \, dx + (x - \log y) \, dy = 0$.
   b) A body is heated to 110 ^{0}C and placed in air at 10 ^{0}C. After one hour its temperature is 60 ^{0}C. How much additional time is required for it to cool to 30 ^{0}C?

2. a) Solve: $(D^2 + 2)y = x^2 e^{3x} + e^x \cos 2x$.
   b) A horizontal-rod is freely pinned at each end. It carries a uniform load w lb per unit length and has a horizontal pull P. Find the central defection and the maximum bending moment, taking the origin at one of its ends.

3. a) If $x = a \cosh\xi \cos\eta$, $y = a \sinh\xi \sin\eta$, show that $\dfrac{\partial(x,y)}{\partial(\xi,\eta)} = \dfrac{1}{2}a^2(\cosh 2\xi - \cos 2\eta)$
   b) A rectangular box open at the top is to have volume of 32 cubic ft. Find the dimensions of the box requiring least material for its construction.

4. a) Show that the evolute of the cycloid x = a(θ - sin θ), y = a(1 - cos θ) is another cycloid.
   b) Trace the curve $ay^2 = x^3$

5. a) Find the Laplace transform of (i) $e^{4t} \sin2t \cos t$. (ii) $(1-e^t)/t$
   b) Apply convolution theorem to evaluate $L^{-1}\left[\dfrac{s^2}{(s^2 + a^2)(s^2 + b^2)}\right]$.

6. a) Solve by using Laplace Transforms : $y^{11} - 3y^1 + 2y = 4t + e^{3t}$
      when $y(0) = 1, y^1(0) = -1$.
   b) Using Heavisides expansion formula, find $L^{-1}\left\{\dfrac{19s + 37}{(s + 1)(s - 2)(s + 3)}\right\}$.

7. a) Find the length of the arc of the parabola $x^2 = 4ay$ measured from the vertex to one extremity of the latus rectum.
   b) Change the order of integration in $I = \displaystyle\int_0^\infty \int_x^\infty \dfrac{e^{-y}}{y} \, dy dx$ and hence evaluate it.

8. a) Prove that $\nabla^2 f(r) = f^{11}(r) + \dfrac{2}{r}f^1(r)$.
   b) Use the divergence theorem to evaluate $\displaystyle\iint_S (xdydz + ydzdx + zdxdy)$, where S is the portion of the plane $x + 2y + 3z = 6$ which lies in the first octant.

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CODE No.:10BT1BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE
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I B.Tech (SVEC10) Regular/Supplementary Examinations May - 2012
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) If $A = \dfrac{1}{3} \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & -2 \\ -2 & 2 & -1 \end{bmatrix}$ prove that $A^{-1} = A'$, where A' is the transpose of A.

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

2. a) Prove that a square matrix A and its transpose A^T have the same eigen values.
  b) Reduce the quadratic form $x^2 + 4y^2 + z^2 + 4xy + 6yz + 2zx$ to canonical form by Orthogonal Transformation and find its rank and signature.

3. a) Find the real root of the equation $2x - 3 \sin x - 5 = 0$, using Newton Raphson Method.
  b) Fit a curve of the form $y = ab^x$ to the data given below by the method of least squares.

x	1	2	3	4
Y	4	11	35	100

4. a) From the following table, find y when x = 38.

x	30	35	40	45	50
y	15.9	14.9	14.1	13.3	12.5

  b) Find f (2.5) using Newton's forward formula from the following table.

x	0	1	2	3	4	5	6
y	0	1	16	81	256	625	1296

5. a) Given $\sin 0 = 0$, $\sin 10 = 0.1736$, $\sin 20 = 0.3420$, $\sin 30 = 0.5000$, $\sin 40 = 0.6428$. Find numerical value of $\cos x$ at x = 10, using numerical differentiation.
  b) The following table gives the velocity V of particle at a distance S from a point on it's path

S(feets) :   0   10   20   30   40   50   60
V(feets/Sec): 47   58   64   65   61   52   38

Estimate the time taken by the particle to travel 60 feet using Simpson's rule.

6.
  a) Using Euler method, solve for y at x = 2 from $\dfrac{dy}{dx} = 3x^2 + 1$, $y(1) = 2$, taking step size
     h = 0.5 and h = 0.25.
  b) Find y(0.1) and y(0.2) using Runge -Kutta 4th order formula given that $y' = x^2 - y$
     and y(0) = 1.

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

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

b) Find the sine transform of $f(x) = \begin{cases} \cos x & if \ 0 < x < a \\ 0 & if \ x \geq a \end{cases}$

8. a) Find $Z[(\cos\theta + i \sin\theta)^n]$ hence evaluate $Z(\cos n\theta)$ and $Z(\sin n\theta)$.

b) Using Z- transform, solve $4u_n - u_{n+2} = 0$ given that $u_0 = 0$, $u_1 = 2$.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
I B.Tech (SVEC10) Regular/Supplementary Examinations May - 2012
MATHEMATICS FOR BIOTECHNOLOGISTS
[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

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

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

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

2. a) If $f(x) = \begin{cases} x+1 & when\ x \le 1 \\ 2x & when\ 1 < x < 2 \\ 1+x^2 & when\ x \ge 2 \end{cases}$

   Then discuss the continuity of f at $x=1$ and $x=2$.

   b) Find $\dfrac{dy}{dx}$ when $x = a(1-\cos\theta),\ y = a(\theta + \sin\theta)$.

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

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

4. a) Solve $\dfrac{dy}{dx} + x\sin 2y = x^3 \cos^2 y$.

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

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

   b) Solve $\dfrac{d^2y}{dx^2} + y = \cos ec(x)$ by the method of variation of parameters.

6. a) (i) Find $L\{e^{-3t}(2\cos 5t - 3\sin 5t)\}$

   (ii) Does Laplace transform of $\dfrac{\cos at}{t}$ exist? Justify.

   (iii) Find $L\left[\dfrac{e^{-at} - e^{-bt}}{t}\right]$.

   b) Find the inverse Laplace transform of $\dfrac{s}{(s+2)^2 + 9}$.

7.

Using Laplace Transform Solve $\dfrac{d^2 y}{dt^2} + 5\dfrac{dy}{dt} + 6y = e^{-t}$, $y(0) = \dfrac{d}{dt}y(0) = 0$.

8.

a) Find the directional derivative of $\phi = x^2 yz + 4xz^2$ at the point (1, -2, -1) in the direction of the vector $2\bar{i} - \bar{j} = 2\bar{k}$.

b) Verify Stoke's theorem for $\bar{F} = (x^2 + y^2)\bar{i} - 2xy\,\bar{j}$ taken around the rectangle bounded by the lines $x = \pm a$, $y = 0$, $y = b$.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech (SVEC10) Regular/Supplementary Examinations May - 2012

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) What is a computer language? What is the difference between high level programming language and low level programming language? List at least five high level programming languages.
   b) Write the difference between algorithm and flowchart. Write an algorithm to swap the content in two integer variables without using any other variable.

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

3. a) Write a C program to find the largest of three numbers using Conditional Expression.
   b) Differentiate between do…while and while loops. Write the program to convert the numeric score to letter grade in which 90% or more is an A, 80-89% is a B, 70-79% is a C and 60 - 69% is a D. Anything below 60% is an F. Use switch statement to solve the problem.

4. a) Develop an algorithm to find the factorial of a given integer.
   b) Design an algorithm to evaluate the sin(x) function as defined by infinite series expression:
   $$\sin(x) = x/1! - x^3/3! + x^5/5! - ....$$

5. a) Write a C program for sorting numbers in ascending order using insertion sort.
   b) Write a C program which replaces each diagonal element A[i][j] of a given matrix A with Maximum {A[i][j], sum of elements in i^{th} row, sum of elements in j^{th} column}.

6. a) Write the difference between call-by-value and call-by-reference. What is function prototype?
   b) Write a C program to find the largest number in the array of numbers by using recursion.

7. a) What is pointer variable? Write the advantages of pointers in C. What is the difference between malloc and calloc?
   b) Write a C program for allocating memory to a two dimensional array and show how to insert elements into that array.

8. a) Write a C program to display the contents of a file in reverse order.
   b) Write a C program for implementing linear queue operations.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech (SVEC10) Regular/Supplementary Examinations May - 2012

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. "Amartya Sen worked to assess poverty, to evaluate inequality and to dispel gender inequality." Discuss.

2. How did Mother Teresa expand her service activities?

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

4. Describe how Kalpana Chawla became the astronaut.

5. Describe what Rudyard Kipling finds in the jungle grass.

6. Write an essay on the important films of Chaplin.

7. a) Attempt an essay on how technology can change the face of India in the next two decades.
   b) Write a letter to your former teacher informing him /her of your present position.

8. **a) Fill in the blanks with suitable prepositions:**
      1. He was searching -----------a book.
      2. I was talking to you ----------this man.
   b) Correct the errors in the following sentences:
      1. He can pass if he studies hard, can he?
      2. If I am the Prime Minister I would do many things for the country.
   c) Choose the correct verb out of the two given in brackets:
      1. Politics (are, is) an interesting area.
      2. He (lay, lied) on the bed for a long time.
   d) Fill in the blanks with appropriate article:
      1. The guest spoke for--------hour.
      2. Who is --------tallest man in the world?
   e) Change the voice of the verbs in the following sentences:
      1. She was elected the president by the members.
      2. The manager offered him a job.
   f) Put the verbs in brackets into the present perfect tense:
      1. We -----------the lessons well. (understand)
      2. He-----------interest in games. (lose)
   g) Rewrite the following sentences in the indirect speech:
      1. "What is your name?" asked the teacher.
      2. Ramu said to Ravi, "Do you like this shirt?"

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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I B.Tech (SVEC10) Regular/Supplementary Examinations May - 2012
ENGINEERING MECHANICS
[Civil Engineering, Mechanical Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between
         (i)   Resultant and Equilibrant
         (ii)   Coplanar force system and non-coplanar force system.
    b) A weight of 1000N is supported by two chains of lengths 4m and 3m as shown in Fig. 1.
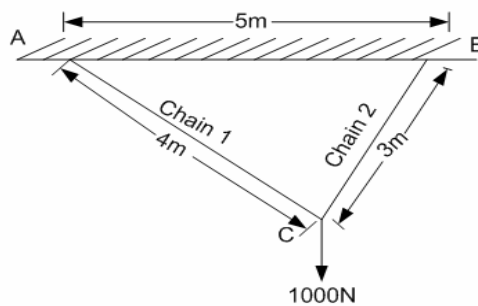   Determine the tension in each chain.

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
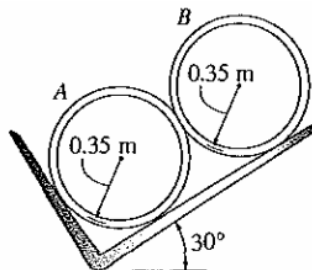   exerted by the pipes on the forks.

Fig. 2

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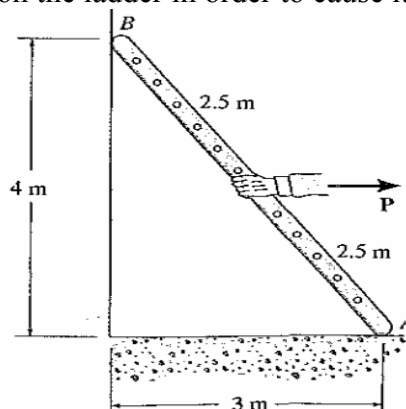   the man must exert on the ladder in order to cause it to move.

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.   a) State and prove theorems of Pappus - Guldinus.
    b) Determine the centroid of area shown in Fig. 4 by taking moment of area about given
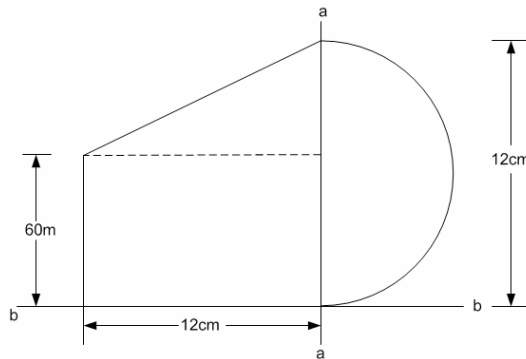   a - a axis and b - b axis.

Fig.4

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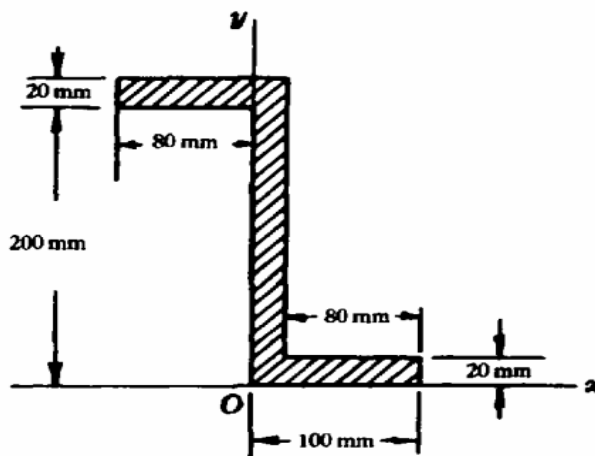

Fig. 5

7.   a) Define the following with respect to projectile motion.
        (i) range, (ii) trajectory & (iii) time of flight.
    b) A particle, starting from rest, moves in a straight line, whose acceleration is given by the equation $a = 12 - 0.01s^2$ where a is in m/sec^2 and s is in meters.
     Determine (i) the velocity of the particle, when it has traveled 25m,
     (ii) the distance traveled by the particle, when it comes to rest.

8.   a) A person of weight W moves with an acceleration 'a' in an elevator. Find the expression for the forces exerted by the person on the floor of the lift for upward and downward motions.
    b) A mass of 0.10kg is rolled on grass with a velocity of 1m/sec. If the resistance be $\dfrac{1}{10}^{th}$ of the weight; how far will the body move?

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Regular/Supplementary Examinations May - 2012

BASICS OF BIOLOGY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Write an account on ecology, morphology, and reproduction in viruses and fungi.

2. Give an account on economic importance of plants.

3. Explain glycolysis pathway.

4. Give in detail the classification of animal kingdom.

5. Explain the functional importance of various endocrine organs of a human body.

6. Discuss the structure and pathology of Entamoeba histolytica ?

7. Define Bio indicators and Biosensors. Comment on their importance.

8. Write short notes on :
    a) Recombinant Proteins.
    b) Microbial enzymes.

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CODE No.:10BT1BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
I B.Tech (SVEC10) Supplementary Examinations December - 2011
ENGINEERING PHYSICS
[Civil Engineering, 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) Define a space lattice and an unit cell.
    b) Describe the BCC crystal structure.
    c) Obtain an expression for the packing factor of BCC structure.

2. a) Basing on band theory of solids, classify solids into conductors, semiconductors and insulators.
    b) Explain Kronig-Penney model.

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

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

5. a) What is reverberation? Give Sabine's formula for reverberation and discuss.
    b) The volume and surface area of a room are 800 m^3 and 34 m^2. The reverberation times with and without material on the walls are 1.6 sec and 2 sec. What is the absorption coefficient of the material on the wall in metric sabine.
    c) What are Mufflers ?

6. Write a short notes on
    (a) Ruby laser.
    (b) He-Ne laser.
    (c) Semiconductor laser.

7. a) What is the principle of optical fiber? What are acceptance angle and acceptance cone ?
    b) Determine the numerical aperture of a step index fiber when the core refractive index 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) Explain the basic properties of nano materials.
    b) Discuss in detail any one technique of fabrication of nano materials.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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I B.Tech (SVEC10) Supplementary Examinations December - 2011
ENGINEERING CHEMISTRY
[Civil Engineering, 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.   Describe the engineering applications of different insulating materials.

2.   a) What is meant by functionality of polymer? Give its significance with examples
     b) Mention the engineering applications of conducting polymers.

3.   a) Explain the following:
        (i) Equivalent conductivity   (ii) Reference electrode (iii) Concentration cell
     b) Describe the working of methanol-oxygen fuel cell.

4.   a) Define corrosion? Explain different methods of controlling corrosion.
     b) Write a note on electroplating.

5.   a) Distinguish between physical absorption and chemical absorption. Give suitable examples.
     b) Discuss briefly on characteristics of colloids.

6.   Describe nanomaterial and discuss its classification.

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

8.   a) How total hardness of water is determined using EDTA ?
     b) What is reverse osmosis? How is sea water purified by R.O.?

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CODE No.:10BT1BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE
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I B.Tech (SVEC10) Supplementary Examinations December - 2011
ENGINEERING MATHEMATICS
[Civil Engineering, 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) Solve the Differential equation $\frac{dy}{dx}(x^2y^3 + xy) = 1$.
   b) Find the orthogonal trajectories of the family of curves $r^n = a^n \cos n\,\theta$.

2.
   a) Solve: $(D^2 + 2)y = x^2 e^{3x} + e^x \cos 2x$.
   b) Solve the differential equation $(D^2 + 1)\ y = \text{cosec } x$ by the Method of Variation of parameters.

3.
   a) Show that the functions $u = x + y + z$, $v = x^2 + y^2 + z^2 - 2xy - 2yz - 2zx$ and $w = x^3 + y^3 + z^3 - 3xyz$ are functionally related.
   b) Find the shortest distance from origin to the surface $xyz^2 = 2$.

4.
   a) Trace the curve $r^2 = a^2 \cos 2\theta$..
   b) Find the envelope of the family of circles passing through the origin and with their centers lying on the ellipse.

5.
   a) (i) Find $L(t\,e^{2t} \sin 3t)$ (ii) $L^{-1}\{\ 1/(s^2 + 2s + 5)\ \}$.
   b) Using convolution theorem evaluate $L^{-1}\{\ 1/\ s(s^2+2s+2)\ \}$.

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

7.
   a) Find the 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) 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 $x^2 + y^2 = a^2$.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
I B.Tech (SVEC10) Supplementary Examinations December - 2011
MATHEMATICAL METHODS
[Electrical and Electronics Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Electronics and Control Engineering, Computer Science and Systems Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1.

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

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

2.

a) Find the Eigen values and Eigen vectors of the matrix $\begin{bmatrix} 5 & -2 & 0 \\ -2 & 6 & 2 \\ 0 & 2 & 7 \end{bmatrix}$.

b) Using Cayley-Hamilton theorem find the inverse and A^4 of the matrix
$A = \begin{bmatrix} 7 & 2 & -2 \\ -6 & -1 & 2 \\ 6 & 2 & -1 \end{bmatrix}$.

3. a) Develop a recurrence relation for $\sqrt[4]{N}$ using Newton Raphson method and then compute $\sqrt[4]{32}$ up to three decimal places

b) Briefly write about the curve fitting. The results of measurement of electric resistance R of a copper bar at various temperatures $t^0 c$ are listed below

t :	19	25	30	36	40	45	50
R :	76	77	79	80	82	83	85

If R is related to 't' by the relation $R = a + b.t$, then find a, b by least squares.

4. a) The area A of a circle of diameter d is given below

d :	80	85	90	95	100
A:	5026	5674	6362	7088	7854

Calculate the area of circle of diameter '84' by Newton forward interpolation.

b) Determine f(x) as a polynomial in x for the following data using Newton's divided difference formulae.

x :	-4	-1	0	2	5
f(x) :	1245	33	5	9	1335.

5. a) The population of a certain town (as obtained from censes data) is shown in the following table:

year	1951	1961	1971	1981	1991
population (in thousand)	19.96	39.65	58.81	77.21	94.61

Estimate the rate of growth of the population in the year 1981.

b) Evaluate $\int_0^1 \frac{1}{1+x} dx$ by Trapezoidal rule and Simpson's $\frac{1}{3}$ rule.

6. Use Runge -Kutta 4th order method to find the value of y at $x = 1$ and given that $\frac{dy}{dx} = \frac{y-x}{y+x}$ $y(0) = 1$ with $h = 0.5$.

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

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

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

8. a) Obtain the Fourier series of the function $f(x) = e^x$ from $x = 0$ to $x = 2\pi$.

b) Find the Fourier transform of $\frac{1}{\sqrt{|x|}}$.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
I B.Tech (SVEC10) Supplementary Examinations December - 2011
MATHEMATICS FOR BIOTECHNOLOGISTS
[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

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

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

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

2. a) Evaluate $\displaystyle\lim_{x\to\infty}\dfrac{(3x-1)(2x+5)}{(x-3)(3x-7)}$.

   b) Find the nth derivative of $\dfrac{x}{(x-1)(2x+3)}$.

3. a) Evaluate $\displaystyle\int_0^{\pi}\dfrac{x\sin x}{1+\cos^2 x}\,dx$.

   b) Find the area of the cardioid Evaluate $r = a(1-\cos\theta)$.

4. a) Solve $\dfrac{dy}{dx} + \dfrac{y\cos x + \sin y + y}{\sin x + x\cos y + x} = 0$.

   b) If the temperature of the air is $30°\,C$ and the substance cools from $100°\,C$ to $70°\,C$ in 15 minutes. Find when the temperature will be $40°\,C$.

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

   b) Solve the differential equation $\dfrac{d^2 y}{dx^2} + y = Sec\,x$, using the method of variation of parameters.

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

   b) Solve by the method of variation of parameters $\dfrac{d^2 y}{dx^2} + y = \cos ecx$.

7. a) Solve the following equation by the transform method: $\dfrac{d^2 x}{dt^2} + x = t\cos 2t$ given that $x(0) = x'(0) = 0$.

   b) Find $L\left[\displaystyle\int_0^t \dfrac{e^t \sin t}{t}\,dt\right]$.

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

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

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CODE No.:10BT1EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
I B.Tech (SVEC10) Supplementary Examinations December - 2011
PROBLEM SOLVING AND COMPUTER PROGRAMMING
[Civil Engineering, 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) With a net schematic diagram, establish the relationship between application and system software.
    b) Briefly explain the top down design technique of problem solving.

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

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

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

5. a) What is array? Explain how to declare single and multi dimensional arrays in C.
    b) Write a C program to print transpose and diagonal elements of a m x m matrix.

6. a) Define recursion. Write a routine for factorial using recursion.
    b) Explain nested structures with suitable example.

7. a) With an example, explain how to declare and access pointers.
    b) write a program to add two numbers 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.

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CODE No.:10BT1HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
I B.Tech (SVEC10) Supplementary Examinations December - 2011
TECHNICAL ENGLISH
[Civil Engineering, 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. Write an essay on what Pico Iyer says about Ladakh.

2. What discovery did Raman make during his voyage across the Mediterranean and how did it prove to be important?

3. The greatest tribute to technological India is Mokshagundam Visveswarayya. Substantiate.

4. Chaplin was a unique master entertainer. Discuss.

5. "Service to humanity is service to God" Elaborate.

6. Explain the problems faced by Satyajit Ray in making films in Indian studios.

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 blanks with suitable prepositions:
        (i)   He apologized _____ being late.
        (ii) They are afraid _____ losing the match.
    b) Correct the errors in the sentences below:
        (i)   There be 206 bones in the human body.
        (ii) None of my friends are smart.
    c) Choose the correct verb out of the two choices given in brackets:
        (i)   The sitar as well as the guitar _____ to be tuned for the big party tomorrow. (has, have)
        (ii) The mayor together with his two brothers_____ going to have to explain about this.(is, are)
    d) Fill in blanks with suitable articles:
        (i)   Have we reached _____ Ganga river basin yet?
        (ii) That is _____ uniform.
    e) Change the voice of the verbs in the following sentences:
        (i)   They were singing a song.
        (ii) The bike is being repaired.
    f) Use the appropriate tense form of the verb given in brackets:
        (i)   Mr.Sharma _____ there in that house for the past ten years.(live)
        (ii) Latha borrowed one book from the club last year. She_____(not, order) anything since.
    g) Rewrite the following sentences in reported speech:
        (i)   The officer said to me, " Shut up"
        (ii) Shyam said, " I want to visit my friends this weekend."

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CODE No.:10BT10101

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
I B.Tech (SVEC10) Supplementary Examinations December - 2011
ENGINEERING MECHANICS
[Civil Engineering]

Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the following with suitable examples:
       Coplanar forces, Non-coplanar forces, Parallel and Non parallel forces.
    b) The 500N force acting on the frame is to be resolved into two components acting along the
        axis of the struts AB and AC as shown in Fig.1. If the component of force along AC is
        required to be 300 N, directed from A to C, determine the magnitude of force acting along
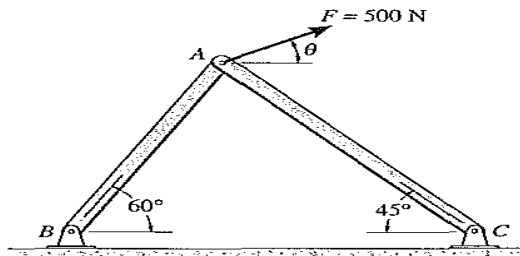   AB and the angle θ of the 500 N force.

Fig. 1

2. Calculate reactions at A, B, C and D as shown in Fig. 2.
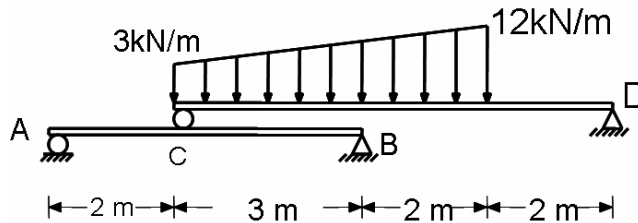

Fig. 2

3. Determine the forces in all the members of the truss shown in Fig. 3 and indicate the magnitude and
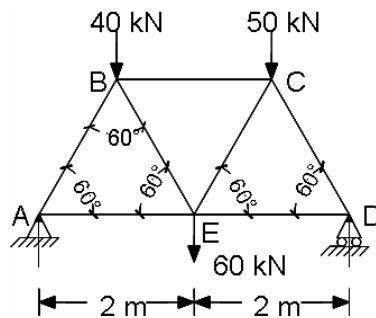   nature of forces on the diagram of the truss.

Fig. 3

4. a) What are plane trusses? Discuss the assumptions in design of trusses.

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b) Determine the force in each member of the truss shown in Fig.4, and state if the members are in tension or compression. Set $P_1 = P_2 = 4$ kN
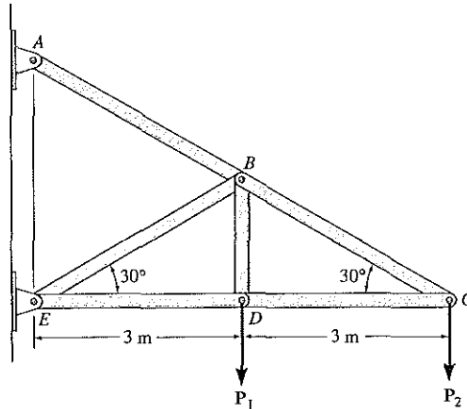

Fig. 4

5. a) Define
   (i) Centroid
   (ii) Centre of mass
   (iii) Centre of gravity
   b) Determine the centre of gravity of the plane uniform lamina shown in Fig. 5.
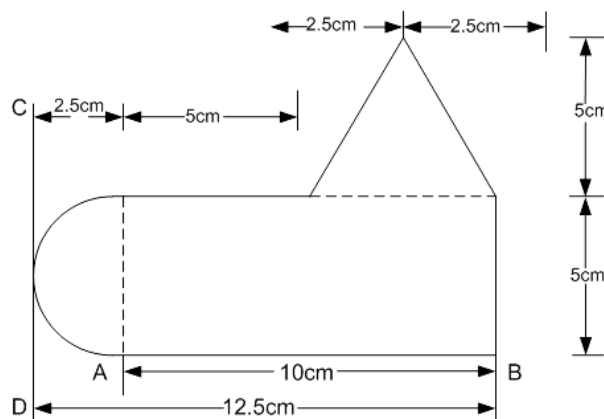
Fig.5

6. a) State and prove the theorem of perpendicular axis.
   b) Find the product of inertia of a quarter of a circle with respect to the x - and   y - axis.

7. a) A jet-propelled object has straight-line motion according to the equation $x = 2t^3 - t^2 - 2$, where x is in meters and t is in seconds. What is the change in displacement while the speed changes from 4 m/s to 48 m/s?
   b) A body moves along a straight line so that its displacement from a fixed point on the line is given by $s = 3t^2 + 2t$. Find the displacement, velocity, and acceleration at the end of $t = 3s$.

8. a) Homogeneous sphere of radius of a=100 mm and weight W=100 N can rotate freely about a diameter. If it starts from rest and gains, with constant angular acceleration, an angular speed n=180rpm, in 12 revolutions, find the acting moment.
   b) A homogeneous solid cylinder of weight 100 N whose axis is horizontal rotates about its axis, in frictionless bearings under the action of the weight of a 10N block which is carried by a rope wrapped around the cylinder. What will be angular velocity of cylinder two seconds after the motion starts? Assume the diameter of cylinder as 100cm.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
I B.Tech (SVEC10) Supplementary Examinations December - 2011
BASICS OF BIOLOGY
[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Draw a diagram of cell structure and give the differences between Prokaryotes and Eukaryotes.

2. Give in detail the classification of plant kingdom.

3. Explain the metabolism of nitrogen with special reference to assimilation of ammonium.

4. Describe the phylogeny of invertebrates.

5. Explain the functional importance of various endocrine organs of a human body.

6. Write about the diseases caused by different viruses.

7. Define Bio indicators and Biosensors. Explain their importance.

8. Write short notes on
   a) Transgenics   b) Microbial enzymes.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
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) Prove that if E_1, E_2 and E_3 are random events in a sample space and if E_1, E_2, E_3 are pair wise independent and E_1 is independent of $(E_1 \cup E_2)$, then E_1, E_2 and E_3 are mutually independent.

   b) A random variable X gives measurements 'x' between '0' and '1' with a probability function $f(x) = \begin{cases} 12x^3 - 12x^2 + 10x & 0 \le x \le 1 \\ 0 & elsewhere \end{cases}$

       i) Find $P(X \le \frac{1}{2})$ and $P(X > \frac{1}{2})$

       ii) Find a number k such that $P(X \le k) = \frac{1}{2}$.

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 normal equations for fitting the regression line Y = a + bX..

   b) Find Pearson's correlation coefficient between X and Y from the following data.

X	12	13	14	15	16	17	18
Y	28	25	22	21	22	20	10

4. a) A population consists of six numbers 4,8,12,16,20,54 consider all samples of size two which can be drawn without replacement from this population. Find
       i) the population mean
       ii) the population standard deviation
       iii) the mean of the sampling distribution of means
       iv) the standard deviation of the sampling distribution of means.

   b) A sample of size 65 is taken from a population whose standard deviation is 12. Find the standard error of sampling distribution of means.

5. a) 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 μ = 22000 miles against the alternative μ < 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 α = 0.05.
   Operator-A: n = 100, mean = 210, sd = 11
   Operator-B: n = 150, mean = 220, sd = 11.

6. a) The average thickness of a leather washer from a sample of 10 washers is found to be 9.52mm with a standard deviation of 0.60mm. It was believed that such washers will have an average thickness of 10mm. Test whether this sample has come from the believed population.

   b) Explain the method of conducting a chi-square test on (r x s) contingency table.

7. a) What is a control chart ? Explain briefly the construction and uses of mean chart, p-chart and range chart.
    b) During an examination of equal length of cloths the following are the number of defects observed. 2, 3, 4, 0, 5, 6, 7, 4, 3, 2
    Draw a control chart for the number of defects and comment whether the process is under control or not.

8. A machine repairing shop gets on average 16 machines per day (of eight hours) for repair and the arrival pattern is Poisson. At the moment there is no repair man available at the shop. The shop owner has two applicants A and B for the job of repairman. Both A and B claim that the service times are exponentially distributed with mean 20 and 15 minutes respectively. Then demand salaries Rs.500 and Rs.600 per hour per machine. Assuming that the claims of the applicants are true, which one should be employed.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular Examinations November - 2011

ENVIRONMENTAL SCIENCE

[Electronics and Communication Engineering, Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define ecosystem? Explain the role of biotic and abiotic components in the environments?
    b) what are the segments of atmosphere? Explain the levels of atmosphere.

2. a) Write a detailed note on desertification.
    b) Explain briefly about non renewable resources of energy.

3. a) Explain the terms, producers, consumers and decomposers.
    b) Discuss the energy flow in an ecosystem.

4. a) Write an essay on hot spots of biodiversity.
    b) Illustrate endemism.

5. What is mean by air pollution? Explain the causes and effects of air pollution.

6. Discuss the following:
    a) Ozone layer depletion
    b) Wild life (Protection) Act 1972.
    c) Environment (Protection) Act 1986.

7. a) Explain in detail about environmental ethics.
    b) Write a detailed note on T.B.

8. a) Narrate environmental experiences gained from your field trips.
    b) List out seven major environment related news items of the year 2011.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
SPECIAL FUNCTIONS AND COMPLEX ANALYSIS
[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1.
   a) Solve $(x^2 - yz)p + (y^2 - zx)q = z^2 - xy$.

   b) Solve the heat equation $\dfrac{\partial u}{\partial t} = \dfrac{\partial^2 u}{\partial x^2}$, with boundary conditions

     $u(x,0) = 3\sin n\pi x, u(0,t) = 0$ and $u(1,t) = 0$, where $0 < x < 1, t > 0$.

2.
   a) Define Beta and Gamma functions. Prove that $\displaystyle\int_0^1 \dfrac{x^2}{\sqrt{1-x^4}}\,dx \int_0^1 \dfrac{1}{\sqrt{1-x^4}}\,dx = \dfrac{\pi}{4\sqrt{2}}$.

   b) Express $J_5(x)$ in terms of $J_0(x)$ and $J_1(x)$.

3.   a) An electric field in the *xy*-plane is given by the potential function
     $\phi = 3x^2 - y^2$. Find the stream function.

   b) Show that the function $f(z) = \sqrt{xy}$ is not analytic at the origin even though
     Cauchy Riemann equations are satisfied.

4.
   a) Evaluate $\displaystyle\int_C (z^2 + 3z + 2)dz$, where C is the arc of the cycloid $x = a(\theta + \sin\theta)$,

     $y = a(1 - \cos\theta)$, between the points (0,0) and *(πa, 2a)*.

   b) Evaluate $\displaystyle\oint_C \dfrac{z^3 - 2z + 1}{(z - i)^2}\,dz$, where $C : |z| = 2$.

5.
   a) Find the Taylor's series of $f(z) = \dfrac{z-1}{z+1}$ about the point z =1.

   b) Find all poles of $f(z) = \dfrac{1}{1 + z^4}$ and find residues at all it's poles.

6.   a) State and prove residue theorem.

   b) Evaluate $\displaystyle\int_0^\infty \dfrac{\sin mx}{x}\,dx$, when m > 0.

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) Discuss the transformation $w = z^2$.

   b) Find the image of the rectangle $x = 0, y = 0, x = 1, y = 2$ in *z*-plane under the
     map $w = (1 + i)z + (2 - i)$.

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CODE No.:10BT3BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
MATRICES AND NUMERICAL METHODS
[Civil Engineering, Bio-Technology]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Define the rank of a matrix and find the rank of the following matrix

$$A = \begin{bmatrix} 2 & 1 & 3 & 5 \\ 4 & 2 & 1 & 3 \\ 8 & 4 & 7 & 3 \\ 8 & 4 & -3 & -1 \end{bmatrix}$$

   b) Discuss for what values of λ and μ, the simultaneous equations
   $x + y + z = 6;$ $x + 2y + 3z = 10;$ $x + 2y + \lambda z = μ$ have
   (i) no solution   (ii) a unique solution   and   (iii) an infinite number of solutions.

2.
   a) Using Cayley-Hamilton Theorm find A^4, where $A = \begin{bmatrix} 2 & 3 \\ 3 & 5 \end{bmatrix}$

   b) Find the matrix P which diagonizes the matrix A, where $A = \begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$.

3. a) Find a real root of the equation $x^3 - 2x - 5 = 0$ by 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) Using Newton's forward formula, find the value of f(1.6) form the following data.

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

   b) Using Lagrange's formula find f (9) from the following data

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

5. a) Compute the first and second derivative at x=1.1 from the following the data:

x :	1.0	1.1	1.2	1.3	1.4	1.5	1.6
y :	7.98	8.40	8.78	9.12	9.45	9.75	10.03

   b) Evaluate $\int_0^5 \dfrac{dx}{4x+5}$ by using Trapezoidal rule.

6. a) Using Taylor's series method compute y(0.2) to three places of decimal
   from $\dfrac{dy}{dx} = 1 - 2xy$ given that y(0) =0.
   b) Using Runge kutta method of order 4, find y(0.2) given that
   $\dfrac{dy}{dx} = 3x + \dfrac{1}{2}y,$ $y(0) = 1,$ taking h=0.1.

7. a) Form the partial differential equation by eliminating the arbitrary function from
   z = x f₁(x+t) + f₂(x+t)

   b) If a string of length l is initially at rest in equilibrium position and each of its points is

   given by the velocity $\left(\frac{\partial y}{\partial t}\right)_{t=0} = u_0 \sin\left(\frac{\pi x}{l}\right), 0 < x < l$

   Determine the displacement y(x ,t).

8. a) It $f(x) = |\cos x|$ expand $f(x)$ as a fourier series in the interval $(-\pi, \pi)$.

   b) Find the half-range cosine series for the function $f(x) = x^2$ in the range $0 \le x \le \pi$.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
MECHANICS OF SOLIDS
[Civil Engineering]

Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

1.   a) Derive relationship between E, N and K.
     b) A tapering hollow rod of 750mm length is subjected to an axial load of 20kN. Diameter at one end is 40mm, diameter at the other end is 60mm. Inner diameter of the hollow portion is 20mm uniform. Take E=200GPa.

2.   a) Define the shear force and bending moment at a section of a beam. Explain the utility of drawing SF and BM diagrams for a beam.
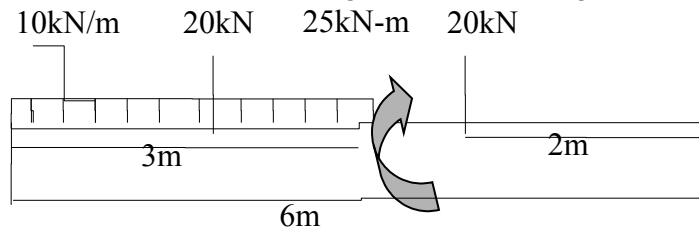   b) Draw the SFD and BMD for the following beam shown in Fig . 1

Fig . 1

3.   a) Show that the bending efficiency of a hollow circular cross section is more than that of a solid circular cross section.
     b) Sketch the variation of shear stress across the depth of a H section shown in Fig.2, if a SF of 100kN acts on the section due to varying flexure. Also determine the maximum shear stress induced in the section.
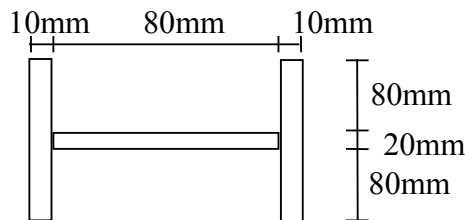
Fig.2

4.   a) Derive an expression for the rotation of a closely coiled helical spring subjected to axial couple.
     b) A truck weighing 20kN and moving at 5kmph has to be brought to rest by buffer springs. Find the required number of springs, each of 15 coils to store the energy of motion during a compression of 150mm. Each spring is made of 25mm diameter steel rod at 200mm mean diameter. Take G = 95GPa.

5.   a) Derive torsion equation.
     b) A hollow shaft of diameter ratio 3/8 is required to transmit 600KW at 110 rpm. The shear stress is not to exceed 63MN/m^2 and the twist in a length of 3m not to exceed 1.4°. Calculate the Maximum external diameter. C=84GN/m^2.

6.   A close coiled helical spring, made out of 8mm diameter wire has 18 coils. Each coil is of 8 cm mean diameter. If the maximum allowable shear stress in the spring is 140Mpa. Determine the maximum allowable load on the spring and elongation of the spring. Also, determine the stiffness of the spring.

7.   A thin steel cylindrical shell of thickness 14 mm, 1 m diameter and 3.25 m long is carrying a fluid at a pressure of 1.6 N/mm^2. Find the change in the dimensions of the cylinder.

8.   a) Derive Lame's equations for the analysis of thick cylinders.
     b) A thick cylinder having internal radius 150mm and external radius 400mm is subjected to an internal pressure of 8MPa. Sketch the variation of radial stress and hoop stress across the thickness of the cylinder.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular Examinations November - 2011

BUILDING MATERIALS AND CONCRETE TECHNOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the qualities of a good brick .
    b) Explain the properties of building stones.

2. a) Describe the constituents of limestone.
    b) Explain the manufacturing process of OPC.

3. a) Explain the various methods of seasoning of timber.
    b) Write short notes on decay of timber.

4. a) Describe the process of annealing.
    b) Explain how are the plastics classified.

5. a) Explain the importance of various ingredients of cement concrete.
    b) Explain the influence of various constituents of concrete on workability.

6. a) Describe the procedure for determination of flexural strength of concrete.
    b) What is the necessity of non-destructive testing of concrete? Explain the Pulse velocity
       method.

7. a) Explain 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. Write short notes on:
    a)   High performance concrete
    b)   Types and usage of fibers.

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CODE No.:10BT30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
BASICS OF ELECTRICAL AND MECHANICAL TECHNOLOGY
[Civil Engineering]

Time: 3 hours   Max Marks: 70

(Minimum of two questions from each part should be chosen for answering five questions)
All questions carry equal marks

PART - A

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

2. a) Explain the principle of operation of dc motor.
    b) What are different losses of dc machine? Explain the procedure for a test to determine the efficiency of dc machine as motor without conducting load test.

3. a) Explain the principle of operation of single phase transformer
    b) A transformer having 150 turns on primary and 70 turns on secondary the primary winding is excited by the 230V, 50Hz supply and secondary side a load impedance of $6 \angle 30^0$ ohms is connected. Neglect the losses of transformer. Calculate i) primary and secondary currents, ii) their power factor and also iii) primary and secondary real powers.

4. Define voltage regulation of an alternator. Explain synchronous impedance method of determining regulation 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 and soldering and welding.

6. a) With neat sketches the working principle of 4 stroke spark ignition engine.
    b) What are the important quality parameters of SI and CI Engine fuel.

7. a) Explain vapour compression system of refrigeration.
    b) What is air conditioning?.explain the comfort air-condition system.

8. a) Explain the working principle of multi-stage compressor with a neat sketch
    b) Write short note on the following:
        i)   Concrete mixer
        ii) Bull dozers
        iii) Belt Conveyors

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CODE No.:10BT30104

SREE VIDYANIKETHAN ENGINEERING COLLEGE
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II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
SURVEYING
[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write detailed notes on reciprocal ranging.
    b) A steel tape is 20 m long standardized at 55° F with a pull of 10 kg was used for measuring a base line. Find the correction per tape length, if the temperature at the time of measurement was 80° F and the pull exerted was 16 kg. Weight of 1 cubic cm of steel = 7.86 g, weight of tape = 0.8 kg and E = 2.109 x 10^6 kg/cm². Coefficient of expansion of tape = 6.2 x 10^{-6} per 1° F.

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

3. a) Describe the methods of leveling
    b) The following consecutive readings were taken with a dumpy level and 5 m leveling staff on continuously sloping ground at a common interval of 15 m. The first point is having an elevation of 85.275 m. Rule out a page of level field book and enter the readings. Calculate (i) the reduced levels of the points by rise and fall method and
           (ii) the gradient of the line joining the first and last point.
         0.415, 1.025, 2.085, 2.925, 3.620, 4.595, 0.715, 2.115, 3.090, 4.405.

4. The latitudes and departures of the lines of a closed traverse are given below. Calculate the area of the traverse.

Line	Northing	Southing	Easting	Westing
AB		157.2	154.8	
BC	210.5		52.5	
CD	175.4			98.3
DA		228.7		109.0

5. a) Explain the procedure to measure a horizontal angle by repetition method using a theodolite.
    b) Explain the procedure of traversing by direct method without transiting using fast needle method.

6. a) What are the various constants of a tacheometer? How are they determined?
    b) What do you mean by an "anallactic lens"? What are the advantages and disadvantages of using it?

7. a) Derive a formula for a shift of a transitory curve with the usual notations.
    b) A road bend deflects 75^0 is to be designed for a maximum speed of 80 KMPH and centrifugal ratio 1/4 and radial acceleration 0.3 m/sec³. The curve combined with two cubic spirals. Calculate the radius of the curve, the length of transition curve and the chainages of different points on the curve if the chainage of the intersection point is 4000 m.

8. a) What are the advantages and disadvantages of total station?
    b) Write detailed notes on electronic distance measurement.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
FLUID MECHANICS-I
[Civil Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) A shaft 200 mm in diameter and 1.2 m long rotates concentrically inside a cylinder, 200.2 mm in diameter at 250 rpm. The annular space is filled with oil of specific gravity 0.85 and kinematic viscosity 400 mm^2/s. What is the power required to rotate the shaft?
    b) Determine the bulk modulus of elasticity of a liquid, if the pressure of the liquid is increased from 7 MN/m^2 to 13 MN/m^2 and consequently the volume of the liquid decreases by 0.15%.

2. a) Show that the centre of pressure of any lamina immersed under liquid is always below its centroid.
    b) Determine the total pressure and centre of pressure on an isosceles triangular plate of base 4m and altitude 4m when it is immersed vertically in an oil of specific gravity 0.9. The base of the plate coincides with the free oil surface.

3. a) A two dimensional flow is described by the velocity components:
    $$u = 5x^3 \text{ and } v = - 15x^2y$$
    Determine the stream function, potential function (if it exists) and acceleration at P (x = 1 m and y = 2 m)
    b) Giving suitable examples, define uniform, non uniform, steady and unsteady flows.

4. a) Derive an expression for Bernoulli's theorem from first principle and state the assumptions made for such a derivation.
    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 19.62N/ cm^2 and 14.91N/cm^2 respectively, and the discharge is 150 litres/s, determine the loss of head and direction of flow.

5. A straight pipe 30 cm diameter, 6 km long is laid between two reservoirs of surface elevation 170 m and 120 m. To increase the capacity of the line a 20 cm diameter pipeline, 3 km long is laid from the original line's mid point to the lower reservoir. What percentage increase in flow rate is gained by installing the new line. Take f = 0.02 for all pipes.

6. a) What are the advantages of a triangular notch over a rectangular notch?
    b) A venturimeter of inlet diameter 300mm and throat diameter 150mm is fixed in a vertical pipe line. A liquid of specific gravity 0.8 is flowing upward through the pipe line. A differential manometer containing mercury gives a reading of 100mm when connected at inlet and throat. The vertical difference between inlet and throat is 500mm. If co-efficient of discharge is 0.98 then find i) rate of flow of liquid in litre per second and ii) difference of pressure between inlet and throat in N/m^2.

7. a) Oil of relative density 0.92 and dynamic viscosity 1.05 poise flows between two fixed parallel plates kept 1.2 cm apart. If the mean velocity is 1.4 m/s, calculate (i) the maximum velocity, (ii) velocity and shear stress at a distance of 0.2 cm from one of the plates and (iii) head loss in a distance of 25 m.
    b) Oil of specific gravity 0.82 is pumped through a horizontal pipe 15 cm in diameter and 3 km long at a rate of 900 l/min. The pump has an efficiency of 68% and requires 10 hp to pump the oil. Verify that the flow is laminar and determine the viscosity of the oil.

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

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
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) Differentiate between : (i) Absolute and gauge pressure and (ii) Simple and differential manometers.

2. a) Explain the various classifications of flows and give suitable examples for each type of flow.
    b) State Euler's equation of motion for a three dimensional flow and derive Bernoulli's equation from these equations, stating clearly the assumptions involved.

3. a) Derive the Darcy-Weisbach equation for pipe flow.
    b) A horizontal venturimeter with inlet diameter 200mm and throat diameter 100mm is used to measure the flow of water. The pressure at inlet is 0.18 N/mm^2 and the vacuum pressure at the throat is 280 mm of mercury. Find the rate of flow. Take the value of $C_d = 0.98$.

4. a) A nozzle of 60 mm diameter delivers a stream of water at 24 m/s perpendicular to a plate that moves away from the jet at 6 m/s. Find (i) the force on the plate (ii) the work done and (iii) the efficiency of the jet.
    b) Obtain an expression for the force exerted by a jet of water on a fixed vertical plate in the direction of the jet.

5. a) With a neat sketch explain the layout of typical hydro power station.
    b) What is power duration curve? Explain how the power duration curve is constructed.

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 the terms: Specific speed of a turbine, unit speed, unit power and unit discharge of a turbine.
    b) What is cavitation? On what factors does cavitation depend ? How can it be avoided in reaction turbines ?

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.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
ELECTRICAL CIRCUITS
[Electrical and Electronics Engineering]

Time: 3 hours   **Max Marks: 70**
Answer any FIVE questions
All questions carry equal marks

1. a) Explain the terms: Unilateral and bilateral elements.
    b) Explain the terms: Active elements and Passive elements.
    c) The following current wave form i(t) is applied to an inductor of 2 H. Sketch the waveforms of voltage and energy in the inductor.
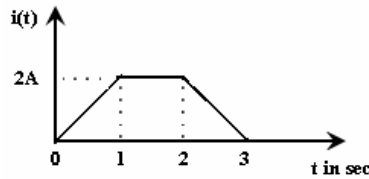
2. a) Define (i) Node (ii) Path (iii) Loop (iv) Branch
    b) By using loop analysis find the current flowing through 5 ohms resistor.
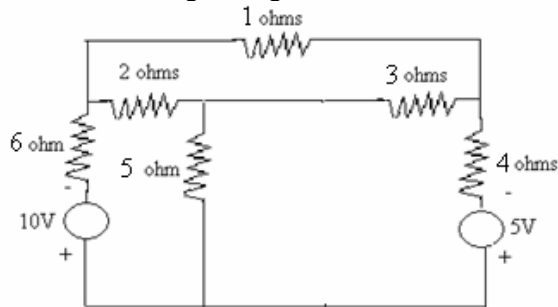
3. a) Define the terms
         i) Cycle
         ii) Amplitude
         iii) R.M.S value and
         iv) Average value of an alternating quantity.
    b) For the wave form as shown in below figure, calculate the RMS value and Average value: and hence the value of form factor.
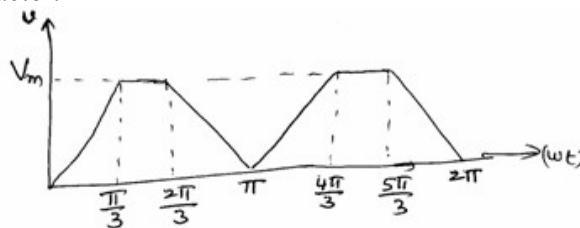
4. a) What is meant by locus diagram? Write its procedure.
    b) A coil having resistance of 20 ohms and inductance of 5mH is connected in series with capacitor and is applied a constant voltage and variable current source. If the maximum current of 0.5 A at 500Hz is drawn, determine band width and half power frequencies

5. a) Derive the relation between line and phase quantities in balanced Star connection
    b) If $Z_1 = 15\angle -30^0$, $Z_2 = 20\angle 80^0$ and $Z_3 = 10\angle 90^0$ ohms are the impedances connected in the form of delta and the supply voltage is 415V. Assume the RYB sequence and so find the phase currents, line currents and the total power absorbed.

6. a) Derive the relation between self inductance, mutual inductance and coefficient of coupling

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

7. a) State and explain the Norton's theorem.
   b) In the circuit shown below, find the voltage across the 20Ω resistor using Superposition Theorem.
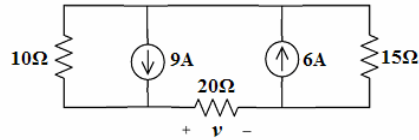
8. a) State and explain Tellegen's theorem
   b) Verify reciprocity theorem for the circuit shown in below figure
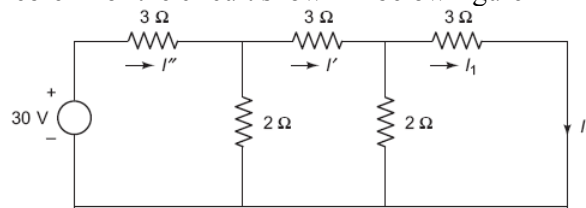
SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
DC MACHINES
**[Electrical and Electronics Engineering]**

Time: 3 hours   Max Marks: 70

**Answer any FIVE questions**
All questions carry equal marks

1. a) State the advantages of analyzing energy conversion devices by field energy concept.

    b) The flux relationship for an electromagnetic system is given by $\lambda = \dfrac{1.2i^{1/2}}{g}$ where g is the air

      gap length. For current i=2A and g=10cm, determine the mechanical force on the moving part
      using (i) energy of the system and (ii) co-energy of the system.

2. a) Enumerate the various parts of dc machine that constitute its magnetic circuit with neat
       diagrams?
    b) A 4-pole short-shunt wave-wound generator supplies 20kW load at terminal voltage of
       250 V, $R_a = 0.1\,\Omega$, $R_{se} = 0.2\,\Omega$, $R_{sh} = 100\,\Omega$ flux for pole = 0.05 Wb. Assume the
       total brush drop to be 2 V. Find   (i) the emf generated and   (ii) number of conductors in
       each parallel path if the speed is 1200 rpm.

3. a) Distinguish between self excited and separately excited dc generators. How are self
       excited generators classified? Give their circuit diagrams.
    b) A 4-pole dc shunt generator with lap connected armature has field and armature resistances
       of 80 Ω and 0.1Ω respectively. It supplies power to 50 lamps rated for 100V, 60W each.
       Calculate the total armature current and the generated emf by allowing a contact drop of
       1V per brush.

4. a) 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 how two shunt generators work in parallel and how they share the load.
    b) Draw and explain the load characteristics of dc series generator and dc compound generator.

6. a) Explain the commutation in the DC motors? Give various applications of DC motor.
    b) A fan is driven by a 220 V, 7 hp series dc motor which draws 25 A and runs at 300 rpm
       when connected to a 220 V supply. The armature resistance of the dc motor is $R_a = 0.6\,\Omega$

       and the resistance of the series field winding is $R_{se} = 0.4\,\Omega$ .. The torque required by the fan

       is proportional to the square of the motor speed. Neglect the rotational losses and armature
       reaction. Determine (i) power developed by the fan, (ii) the torque developed by the motor and
       (iii) if the motor speed is reduced to 200 rpm, find the torque and power delivered to the fan
       at this speed.

7. a) Explain various methods of speed control of DC shunt motors.
    b) A 500V D.C. shunt motor is to have a starter with 5 sections. The maximum permissible
       current is 100A and the armature resistance is 0.5ohms. Determine the resistance in each
       section of starter.

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

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CODE No.:10BT30221

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
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) Explain kirchoff's laws with one example each.
    b) Derive the equations for equivalent resistances for star/delta and delta/star transformations.

2. a) Explain the Thevinin's theorem.
    b) Find the current through 50 Ω resistance for the circuit shown in fig .1
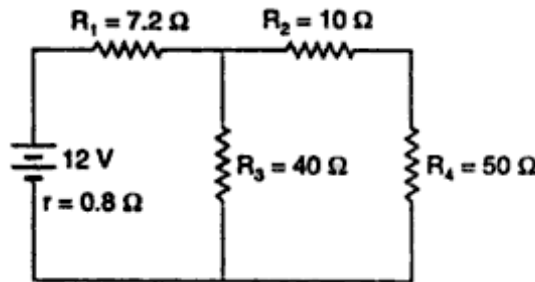
Fig.1.

3. a) Explain phase, phase angle and phase difference with respect to alternating quantities.
    b) A sine wave $v(t) = 200 \sin 50t$ is applied to a 10Ω resistor in series with a coil. The reading of a voltmeter across the resistor is 120V and across the coil is 75 V. Calculate the power and power factor of the circuit.

4. Three equal impendances each having a resistance of 25Ω and a reactance of 40Ω connected in star to a 400 V, 3-Phase, 50Hz supply system, calculate:
    i) The line current   ii) Power factor   iii) Power consumed by the circuit.

5. a) Explain about constructional features of DC Machine.
    b) Find the torque in N-m exerted by a 4-pole series motor whose armature has 1200 conductors connected up in a 2-circuit winding. The motor current is 10A and the flux per pole is 0.02 Wb.

6. Explain the constructional details and principle of operation of three phase induction motors.

7. Explain about Shaded pole motor with neat diagram.

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

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
FOUNDATIONS OF ELECTRICAL ENGINEERING
[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Briefly explain about the fuse and earthing.
   b) Six equal resistors each of 4 ohms are connected as shown in fig. below. Find the equivalent resistance between any two corners?
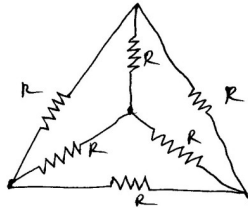
2. a) Define superposition and Thevinin's theorm.
   b) For the network shown below, calculate the current in the 20 ohm resistor by Thevinin's theorm.
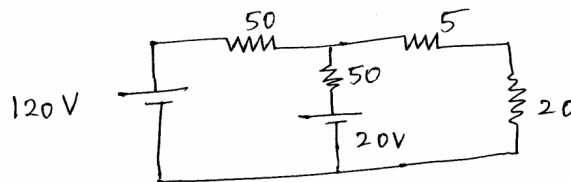
3. a) Define the following terms applied to alternating current circuits:
      (i) RMS value   (ii) form factor   (iii) average value   (iv) peak factor
   b) A resistance of 100 ohms is connected in series with 0.1 mH of inductance. This series combination is connected across 230 V, 50 Hz single phase supply. Calculate power factor, real and reactive powers consumed by the circuit. Also draw the phaser diagram.

4. a) Explain the constructional features of DC Generator with neat diagrams.
   b) Derive EMF equation of DC Generator.

5. a) Explain different parts of transformer.
   b) Explain principle of operation of three phase induction motor.

6. a) Explain about different types of controlling torques in instruments.
   b) Explain about repulsion type moving iron ammeter.

7. Write the important differences between open loop and closed loop systems with suitable examples.

8. a) Define the term : transfer function. Derive the transfer function of the following system by writing the fundamental equations relating input and output:
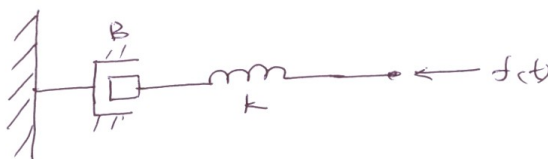
   b) What is the advantage of Signal Flow Graphs over block diagram representation? State and explain Mason's gain formula.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
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) Compare the ideal and practical current sources.
   b) The following voltage wave form v(t) is applied to a capacitor of 2 Farads. Sketch the waveforms of current and energy in the capacitor.
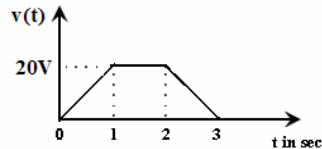
2. a) What is super node and super mesh concept explain with example.
   b) Using Kirchoff's current law, find the values of the currents i_1 and i_2 in the circuit shown in figure.
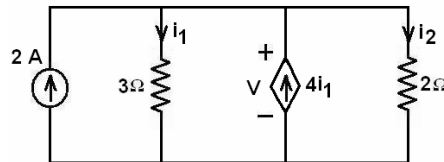
3. a) A 120V, 60W lamp is to be operated on 220V, 50Hz supply mains.
      Calculate what value of (a) resistance (b) inductance, would be required that lamp glows on rated voltage. Which method is preferable and why?
   b) Find the form factor and peak factor of the following wave form shown in Figure.
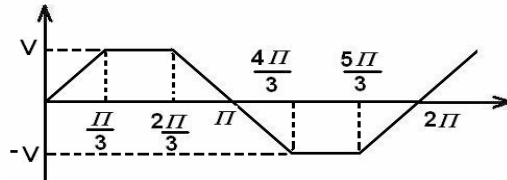
4. a) Explain the following terms
      i)   Impedance
      ii) Admittance
      iii) Active Power
      iv) Power factor
      v)   Power triangle
   b) Find the following for a series parallel circuit shown below
      i)   Total impedance
      ii) Current drawn from supply
      iii) Total apparent, real and reactive power.
      iv) Total admittance
      v)   Power factor
      Also draw the vector diagram.
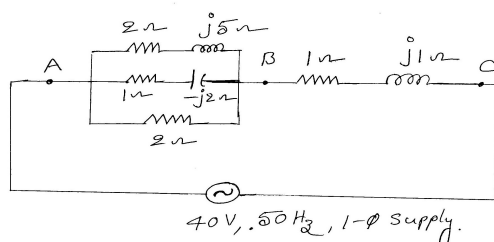
5.   a) Derive the equation for the transient current i(t) in a series RLC circuit excited by a step input of V volts at time t=0. Assume zero initial conditions.

      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.
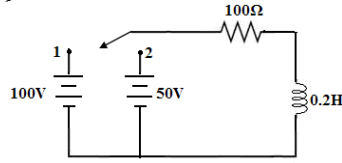
6.   a) Derive an expression for equivalent inductance of two coupled coils connected in parallel.

      b) Determine the equivalent inductance of inductive network with coupled coils shown below
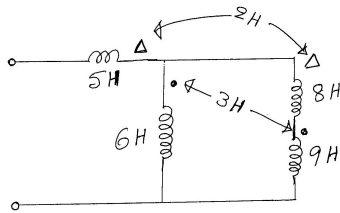
7.   a) State and explain Thevinin's theorem

      b) Determine the value of R so that maximum power is transferred
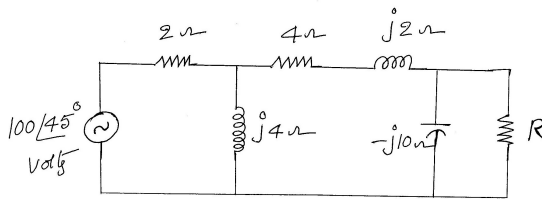
8.   a) State and explain Millman's theorem

      b) Verify the reciprocity theorem for the given circuit shown below
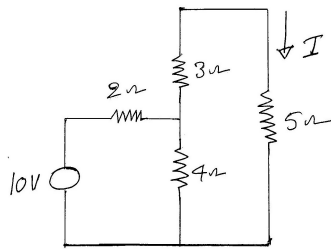
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CODE No.:10BT30401

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
SEMICONDUCTOR DEVICES AND CIRCUITS
[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Derive an expression for depletion capacitance and diffusion capacitance in a PN Junction diode
    b) Draw V-I characteristics of PN junction diode and explain each term in a Diode current equation

2. a) Derive the expressions for ripple factor, efficiency, TUF, percentage regulation of Half Wave Rectifier
    b) Design a zener voltage regulator to meet the specifications: output voltage= 5Volts, load current= 10mAmp, zener voltage=400mW and Input voltage = 12V

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

4. a) Determine the operating Point of potential divider Biasing circuit with $R_2=R_c= 5$ k ohm, $R_E=1$ k ohm and $R_1= 40$ K ohm
    b) How do you distinguish dc and ac load lines with suitable diagrams?

5. 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

6. Compare BJT,FET and JFET in all aspects and write the difference in operation of a depletion MOSFET and enhancement MOSFET.

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

8. Discuss the principle of operation and VI characteristics of
    (i) Photo Diode.
    (ii) UJT.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular Examinations November - 2011

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 Joint and Conditional probability.
    b) When are two events said to be collectively Exhaustive events? Explain with examples.
    c) Determine the probability of the card being either red or a king when one card is drawn from a deck of a regular 52 cards.

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	k^2	$2k^2$	$7k^2+k$

    Find
    (i)   The value of k
    (ii)   P(1.5<X<4.5/X>2) and
    (iii) The smallest value of t for which p(X≤t)>1/2
    b) State the properties of the probability density function.

3. a) State and prove chebchev's inequality?
    b) Find the expected value of the function $g(X)=X^3$ where X is a random variable defined

    by the density $f_x(x) = \left(\dfrac{1}{2}\right) u(x) \exp(-x/2)$.

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

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

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

5. a) Random variables X and Y have the joint density function

    $$f_{X,Y}(x,y) = \begin{cases} (x+y)^2/40 & -1 < x < 1 \; and \; -3 < y < 3 \\ 0 & elsewhere. \end{cases}$$

    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

6. a) Define a Kth-order stationary random process. When it will become a SSS Process?
    b) A random process is defined by Y(t)= X(t) cos($\omega_o t+\theta$) where X(t) is WSS random process that amplitude modulates a carrier of constant angular frequency ω_o with a random phase θ independent of X(t) and uniformly distributed on(-π, π). Is Y(t) a WSS random process?

7. a) Derive the expression for PSD and ACF of band pass white noise and plot them.
    b) Define various types of noise and explain.

8. a) Derive the relationship between cross power spectrum and cross correlation.
    b) Prove that Sxx (ω) = Sxx (-ω)

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular Examinations November - 2011

SIGNALS AND SYSTEMS

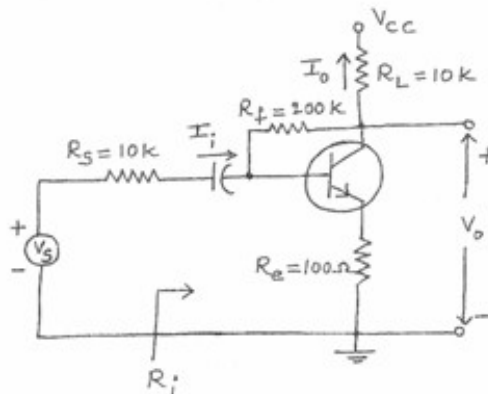[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Sketch the odd and even parts of the signal shown below
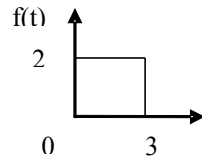
    b) Derive the expression for mean square error when a signal is approximated by a set of N mutually orthogonal signals

2. a) What is the half wave symmetry ? Show that the Fourier series expansion of a periodic wave having half wave symmetry is void of even harmonics.
    b) State the dirichilet conditions for Fourier series

3. a) What are the properties of Hilbert transform?
    b) Find the Hilbert transform of $g(t) = \cos 2\pi f_c t$.
    c) State and prove the Parseval's power theorem.

4. a) Differentiate between convolution and correlation of signals
    b) Prove that power spectral density and auto correlation form Fourier transform pair.

5. a) Explain how periodic signals in presence of noise are detected using correlation.
    b) State and prove parseval's theorem.

6. a) State and 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) Discuss effect of under sampling.
    b) The signal $g(t) = 20\,Cos(50\pi t)\,Cos(60\pi t)$ is sampled at the rate of 100 samples per second.
        (i)   Determine the spectrum of sampled signal
        (ii) Specify cut-off frequency of the ideal reconstruction filter to recover g(t) from its samples
        (iii) What is the Nyquist rate for g(t)

8. a) Find the "z" transform and ROC of the discrete signal.

        X(n) =(3 x 2ⁿ - 4 x 3ⁿ) u(n)

    b) Find the inverse Z-transform for the following function.

$$X(z) = \frac{2z^3 - 5z^2 + z + 3}{(z-1)(z-2)}$$

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
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 zener and avalanche break down mechanisms.
    b) Determine the forward resistance of a PN diode, when the forward current is 5 mA at
       $T = 300K$. Assume the diode is silicon.

2. a) With simple circuit explain how Zener diode will act as a regulator.
    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) Draw the CE-configuration of transistor and explain input and output characteristics.
    b) Explain how transistor works as amplifier.

4. a) Draw the fixed bias circuit and explain the bias stability.
    b) What is thermal runaway. Explain necessary conditions for transistor to be thermally in stable
       condition.

5. Using Small Signal Low Frequency Hybrid model derive A_i, Z_i, A_v and Z_o of a CC BJT Amplifier.

6. a) Explain the JFET construction and principle of operation and draw its V-I characteristics.
    b) Write a short notes on different types of FET biasing.

7. a) Write a Short notes on RC phase shift oscillator.
    b) What are the advantages of negative feedback over positive feedback and prove them.

8. Write a Short notes on the following:
       a) UJT as a relaxation Oscillator.
       b) Varactor Diode.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
DIGITAL LOGIC DESIGN
[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) How do you convert a decimal number to an equivalent number in any other base system? Explain with examples.
   b) What is a signed binary number. Compare 1's and 2's complement methods of representation of negative numbers.

2. a) Simplify the following Boolean expressions using the Boolean theorems.
   (i) (A+B+C) (B'+C) + (A+D) (A'+C)   (ii) (A+B) (A+B') (A'+B)
   b) Why a NAND and NOR gates are known as universal gates? Simulate all the logical operations using NAND and NOR gates.

3. a) Implement $F = \sum (2, 3, 5, 7, 10, 11, 12)$ using   (i)Minimum number of NAND gates and (ii) Minimum number of NOR gates.
   b) Simplify the Boolean expression $f(A,B,C,D) = \sum m(0,1,3,4,8,9,15) + Q(2,6)$ using K- map method.

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

5. a) Explain in detail about debounce circuit.
   b) Write the HDL behavioral description of a D flip-flop.

6. a) Compare the merits and demerits of ripple and synchronous counters.
   b) Design a 4-bit ripple counter using T flip-flops.

7. A combinational circuit is defined by the functions
   $F_1 (A,B,C) = \sum(3,5,6,7)$
   $F_2 (A,B,C) = \sum(0,2,4,7)$
   Implement the circuit with a PLA having 3 - inputs, four product terms and two outputs.

8. a) Explain hazards in asynchronous sequential circuits with examples.
   b) Define Propagation time, set-up time and Hold time.

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CODE No.:10BT30501

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
DISCRETE MATHEMATICAL STRUCTURES
[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Show the following equivalence
   $P \to (Q \vee R) \Leftrightarrow (P \to Q) \vee (P \to R)$.
   b) Obtain the Product of sum canonical form of the formula $(P \wedge Q) \vee (\rceil P \wedge Q \wedge R)$.

2. a) Show that $\rceil (P \wedge Q)$ follows from $\rceil P \wedge \rceil Q$
   b) Show that $\rceil P(a,b)$ follows logically from (x) (y) (P(x, y) $\to W(x,y)$) and $\rceil W(a,b)$.

3. a) Suppose R and S are symmetric and reflexive relations on a set A. Is R∩S

   symmetric and reflexive. Justify your answer.

   b) Show that the "greater than or equal "relation is a partial ordering on set of integers.

4. a) 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: $R^{+} \to R$ be defined by f(x)= log x for any
   x ∈ 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 ∈ G_1.

5. a) Use mathematical induction to prove that n^3-n is divisible by 3 whenever n is a
   positive integer.
   b) How many ways are there to distribute 10 different books among 15 people if no person is
   to receive more than 1 book.

6. a) Use generating functions to determine the number of different ways 10 identical balloons
   can be given to four children if each child receives at least two balloons.
   b) Use generating functions to solve the recurrence relation $a_k = 5a_{k-1}-6a_{k-2}$ with initial
   conditions a_0=6 and a_1=30.

7. a) Explain briefly the following with example:
   i) Planar graph   ii) Hamiltonian graph   iii) Eulerian graph
   b) Prove that in any graph, the number of vertices of odd degree is even.

8. a) Explain how a breadth-first search can be used to order the vertices of a connected graph.

   b) Explain briefly the following:

   (i) Forest   (ii) Minimal spanning tree   (iii) Balanced tree

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
DATA STRUCTURES
[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. Write a C program for find the kth largest integers among 'n' integers. Using the same algorithm find the 5th largest element in the following data: 5, 1, 23, 5, 21, 28, 44, 6, 26, and 36.

2. a) Write a C program to implement all operations of Queue.
    b) Suppose the contents of Q1 and Q2 are as shown below. What would be contents of Queues Q1, Q2 and Q3 after the following code is executed? The queue content are shown front(left) to Rear (right).
       Q1: 42 30 41 31 19 20 25 14 10 11 12 15
       Q2: 10 13 4   4   5
       Q3 = createQueue
          count = 0
          loop (not empty Q1 and not empty Q2)
          count = count + 1
          dequeue (Q1, x)
          dequeue (Q2, y)
          if (y equal count)
          enqueue (Q3, x)
          end if
          end loop

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. 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. Show diagrammatically an AVL tree of maximum possible height with 20 nodes. Your diagram should be clear with *balance factor* indicated for each node.

6. a) Stack can be implemented using an array and a linked list. Write C program to execute all operations of stack by considering both the implementations.
    b) Discuss the advantages and disadvantages of these two implementations.

7. a) Give Kruskal'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. Discuss about merits and demerits of various file organization techniques. Use appropriate examples and diagrams in your explanation.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
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 $C_p=1.089$ and $C_v = 0.837$ KJ/Kg K.

2. a) Derive an expression for the air standard efficiency of an otto cycle.
   b) Differentiate between rotary and positive displacement compressors.

3. a) 0.1 m^3 of steam at a pressure of 30 bar and dryness fraction 0.85 expands to 4.2 bar. Calculate the dryness of steam at end of expansion, work done and heat flow from or to the cylinder if (i) the expansion is hyperbolic, and (ii) the expansion is isentropic. If the latter is represented by the equation $PV^n = C$.
   b) Represent the rankine cycle on p-v and T-s plots.

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) A manometer is fitted as shown in figure below. Determine the pressure at point A with respect to datum at B, pressure at left hand side = pressure at right hand side.
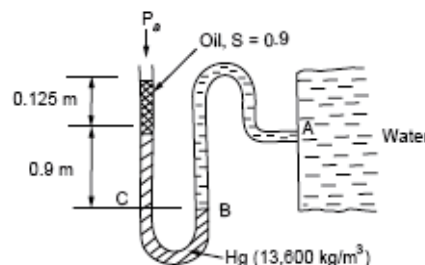
   b) Define absolute pressure and Gauge pressure.

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

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

8. a) Explain the working principle of a single stage centrifugal pump with a neat sketch
   b) A peloton wheel has to be designed for the following data: Power to be developed=6000 KW; Net head available=300m; Speed=550 rpm; Ratio of jet diameter to wheel diameter=1/10; and overall efficiency=85% Find the no. of jets; diameter of the jet; diameter of the wheel; and the quantity of water required.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Regular Examinations November - 2011

BIO CHEMISTRY

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Write short notes on :
    a) Structure and functions of glycoproteins
    b) Reducing sugars

2. Write about the classification and nomenclature of Enzymes?

3. Describe the TCA cycle and its significance in energy production.

4. a) Write about Glycogen biosynthetic pathway with structures.
    b) What are the Check points for glycogenesis and glycolysis?

5. a) Explain in detail about different levels of protein structure.
    b) Explain Ramachandran plot?

6. a) Describe glutamate Pathway.
    b) Write about the serine synthesis process.

7. Briefly describe the fatty acid oxidation?

8. Write different steps in pyramidine biosynthetic pathway. Explain how pyramidine synthesis is regulated?

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CODE No.:10BT32302

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
CELL BIOLOGY
[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. (i) Describe the cell theory .
    (ii) Explain basic properties of cells.

2. What is importance of carbon and water in cell? Give an account of cell motility taking cilia and flagella.

3. Write in detail about the ultra structure, chemical composition and functions of Mitochondria.

4. Describe the structure and functions of Ribosomes . Add a note on protein glycosylation.

5. What is endocytosis and exocytosis?

6. Describe Meiosis.

7. Give the mechanism of Chromosome movement during mitosis.

8. Using a suitable example discuss the role of secondary messengers in signal transduction.

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CODE No.:10BT32303

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
MICRO BIOLOGY
[Bio-Technology]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. Write short notes on
    (a) Germ theory of diseases.
    (b) Louis Pasteur.
    (c) Alexander Fleming.
    (d) Joseph Lister.

2. Explain the five kingdom classification of Whittaker.

3. Describe the nutritional classification of Microbes.

4. Write a note on the following:
    a) IMVIC test
    b) Pure culture techniques
    c) Staining of Anaerobes
    d) Gram's staining

5. Describe the techniques used to preserve microbial cultures.

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

7. Discuss about Hepatitis B Virus with special reference to vaccine development.

8. Write briefly about the isolation, identification and *invitro* cultivation of viruses.

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CODE No.:10BT32304

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
FLUID FLOW IN BIOPROCESSES
[Bio-Technology]

Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

1. a) How the basic laws of momentum heat and mass transfer are used in bioprocesses? Explain.
    b) Write short notes on applications of engineering principles in biotech.industries.

2. a) Natural gas is stored in a LPG bullet of 20 m^3 at a temperature of 400 K and 1.013 x 10^5 kPa. What is the molar density of natural gas (assume ideal gas) ?
    b) Natural gas containing CH_4 (77%), CO_2 (4%), C_2H_6 (5%) and rest N_2 is compressed to a pressure of 2 atm. What is the partial pressure (atm) of CH_4?

3. a) Derive the Bernoulli's equation mentioning all suitable assumptions.
    b) How a boundary layer is formed in tubes and on flat surfaces? Explain schematically.

4. Write about the different types of fluids with examples and discuss about their rheological behaviour.

5. a) For the steady flow of a viscous fluid at constant density in fully developed flow through a horizontal cylindrical tube obtain the shear stress distribution.
    b) Starting with Bernoulli's equation, obtain a relation between skin friction and wall shear.

6. a) Define Mach number and acoustical velocity.
    b) With neat figures, explain the processes of compressible flow.

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

8. a) Brine of specific gravity 1.2 is flowing through a 10 cm I.D. pipeline at a maximum flow rate of 1200 liters/min. A sharp edged orifice connected to a simple U-tube mercury manometer is to be installed for the purpose of measurements. The maximum reading of the manometer is limited to 40 cm. Assuming the orifice coefficient to be 0.62, calculate the size of the orifice required.
    b) Explain the different types of pumps with schematic diagrams.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Regular Examinations November - 2011
SWITCHING THEORY & LOGIC DESIGN
[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Convert 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. Simplify the following Boolean expressions using Boolean algebra:
    i) AB + AB'C(B'C' + C) + (AC)'
    ii) A'BC' + A'BC + AB'C' + ABC
    iii) ABC'D' + ABC'D + ABCD' + ABCD
    iv) AB + ABC' + A'BC + ABC
    v) ABCD + ABCD' + A'BCD + A'BCD'

3. a) Simplify the Boolean function 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) = $\sum$m (0, 1, 2, 8, 10, 11, 14, 15)

4. a) Given F(A,B,C,D)=BC+ABD'+A'C'D. Implement using 8x1 multiplexer?
    b) Design a 2-bit magnitude comparator circuit?

5. Draw the internal construction of PLA having 3 inputs, 3 product terms and 2 output and realize the following functions using it. $F_1 = \Sigma$m (0,1,3,5) and $F_2 = \Sigma$m (0,3,5,7).

6. a) Convert SR Flip-Flop to JK Flip-Flop.
    b) Design a counter with the following repeated binary sequence: 0,1,2,4,6. Use D Flip-Flops.

7. a) With an example explain the simplification of incompletely specified machines?
    b) Explain merger chart methods?

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 Examinations November - 2011
ELECTRICAL & ELECTRONIC MEASUREMENTS
[Electronics and Control Engineering]

Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

1. a) Explain the construction and operation of a true   rms   reading voltmeter.
    b) Write typical specifications of an analog multimeter used   in the laboratory.

2. a) What are the types of Ohm meters and explain Crossed coil moving magnet Ohm meter?
    b) The four arms of a bridge circuit have the following resistances: AB = 700 ohms,
       BC = 735 ohms, CD= 735 ohms and DA = 700 ohms. A galvanometer is connected across BD
       and it given a center zero 200-0-200 µA movement having an internal resistance of 125 ohms.
       A battery of emf 10 V and negligible resistance is connected across AC. Find the current
       flowing through the galvanometer by approximation method.

3. a) Describe the construction and working of a single phase induction type energy meter.
    b) Explain the construction and working of a dynamometer type wattmeter .Derive its torque
       equation when it is used on A.C.

4. a) What do you mean by low, medium and high resistances?. Suggest various suitable methods for
       measuring them. Describe any method to measure a low resistance with accuracy.
    b) A batter is connected to a tangent galvanometer of resistance 10 ohms and produces a
       deflection of 55^0. If an extra resistance of 2.5 ohms is placed in the circuit the deflection falls
       to 50^0. Determine the resistance of the battery.

5. a) Draw the circuit diagram and explain the operation of AC voltmeter using rectifiers.
    b) Describe the working principle of electronic multi meter.

6. a) What is frequency counter and explain the principle and operation of frequency counter with
       help of wave forms?
    b) List out the errors associated with measurement of frequency and time and explain   them.

7. a) How is CRO superior to ordinary measuring instruments and describe the construction and
       working of a CRO.
    b) How much voltage is required across two deflection plates separated by 1 cm to deflect on
       electron beam 1^0 if the effective length of the deflection plates is 2.5 cm and the accelerating
       potential is 1kv ? Deduce the formula used.

8. a) How the display units may be classified on the basis of formats used and describe the part
       played by dot matrix in display devices and discuss the types of dot matrix.
    b) What are the relative advantages of LCD display device over LED display device and explain
       the working of seven segment LCD display?

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CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
PROBABILITY AND STATISTICS
[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]
Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

1. a) Explain (i) Addition theorem and (ii) Multiplication theorems of probability with examples.
    b) A pair of dice is thrown. What is the probability that the sum of score on the dice is neither
        7 nor 11?

2. a) Write down the probability mass function of Binomial distribution with n = 10 and p = 0.5.
        Find the mean and variance of this distribution.
    b) Explain the probability function of Poisson distribution and obtain its mean and variance.
        What is P(X = 0) for this distribution.

3. a) Obtain the normal equations for fitting the regression line Y = a + bX.
    b) Define regression lines and regression coefficients. What is the relationship between
        correlation coefficient and regression coefficients?

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

6. a) The average thickness of a leather washer from a sample of 10 washers is found to be
        9.52mm with a standard deviation of 0.60mm. It was believed that such washers will have an
        average thickness of 10mm. Test whether this sample has come from the believed population.
    b) Explain the method of conducting a chi-square test on (r x s) contingency table.

7. a) Discuss the need and utility of statistical quality control.
    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)

8. Explain the terms i) Pure Birth process ii) Queue iii) Queue discipline and iv) Birth and Death
    process.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
ENVIRONMENTAL SCIENCES
[Electronics and Communication Engineering, Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the scope and importance of environmental science?
    b) What are the atmospheric components?

2. a) Write a detailed note on desertification.
    b) Explain briefly about non renewable resources of energy.

3. a) Explain the structure and function of an ecosystem.
    b) What is mean by ecological succession? Explain.

4. a) What is earth's budget and discuss.
    b) Write a note on the Hot Spots of biodiversity in India?

5. a) What is meant by disaster? Write an essay on disaster management.
    b) Write a detailed note on water pollution.

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

7. a) Explain in detail about environmental ethics.
    b) Write a detailed note on T.B.

8. a) Prepare a field visit report for a forest ecosystem.
    b) Describe the objectives and functions of a field visit survey.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May – 2012

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Find the differential equation of all spheres of fixed radius having their centers in the xy-plane.

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

2. a) Evaluate $\int_0^{\infty} e^{-ax} x^{m-1} \sin bx \, dx$ in terms of Gamma function.

    b) Prove that $\int_0^1 x J_n(ax) J_n(\beta x) dx = 0$ where α, β
    are the roots of $J_n(x) = 0, a \neq \beta$.

3. a) Separate $\tan^{-1}(x + iy)$ into real and imaginary parts.

    b) Find the analytic function whose real part is $\dfrac{\sin 2x}{\cosh 2y - \cos 2x}$.

4. a) Verify the Cauchy's integral theorem for f(z) = z^2 along the boundary of rectangle with vertices -1, 1, 1+ i, -1+ i .

    b) Evaluate $\oint_C \dfrac{5z + 3}{z(z + 1)} dz$ where   C: $|z| = 3$ by integral formula.

5. a) Obtain the Taylor series to represent the functions

    (i) $f(z) = \dfrac{1}{(z + 1)^2}$ about the point $z = -i$

    (ii) $f(z) = \dfrac{2z^3 + 1}{z^2 + z}$ about the point $z = i$.

    b) Determine the poles of the function $f(z) = \dfrac{z^2}{(z - 1)^2(z + 2)}$
    and the residue at each pole.

6. a) Evaluate $\oint_C \dfrac{e^{zt}}{(z^2 + 2z + 2)} dz$ where C:$|z| = 3$,t Є R, by using Residue theorem.

    b) Show that $\int_0^{2\pi} \dfrac{1}{1 - 2a\cos\theta + a^2} \, d\theta = \dfrac{2\pi}{1 - a^2}$ (0<a<1) using contour integration.

7. a) Use Rouche's Theorem to show that the equation $5z^2 + 15z + 1 = 0$ has one root in the disc $|z| < \dfrac{3}{2}$ and four roots in the annulus $\dfrac{3}{2} < |z| < 2$.

b) If an entire function $f(z)$ is bounded for all values of z then prove that $f(z)$ is constant.

8. a) Discuss the transformation $w = z^2$.

b) Find the image of the rectangle $x = 0, y = 0, x = 1, y = 2$ in z-plane under the map $w = (1 + i)z + (2 - i)$.

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CODE No.:10BT30101

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
MECHANICS OF SOLIDS
[Civil Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) What is Strain Energy, Show that the strain energy per unit volume is $f^2/2E$
   b) A steel tube 24mm external diameter and 18mm internal diameter encloses a copper rod 15mm diameter to which it is rigidly joined at each end. If at a temperature of 10 Centigrade there is no longitudinal stress, calculate the stresses in the rod and the tube when the temperature is raised to 200 Centigrade.

2. a) Derive a relationship between Load, SF and BM.
   b) A simply supported beam of span 6m carries at clockwise couple of 5kN.m at 2m from left support and another anticlockwise couple of 10kNm at 4m from left support. The beam carries a UDL of intensity 2kN/m between the couples. Sketch the SFD and BMD.

3. A simply supported steel beam of span 5 m is subjected to a concentrated load of 500 kN at its mid-span. The beam has I-section with the top flange 200 mm × 15 mm, web 12 mm × 215 mm and bottom flange 150 mm × 20 mm. Draw the shear stress distribution across the depth of the section. Also determine the ratio of maximum shear stress to the mean shear stress.

4. A square column of size 600 mm × 600 mm is subjected to a compressive load of 2500 kN at an eccentricity of 150 mm and 200 mm with respect to the centroidal axes. Determine the stresses at the corners of the column.

5. Design a hollow steel shaft which will transmit 75 kW at 125 rpm. The shear stress is to be limited to 60 N/mm² and the angle of twist is not to exceed 1.2^0 in 2 m length of shaft. Assume the internal diameter is 0.6 times the external diameter.

6. An open coiled helical spring with 15 coils is made up of a steel wire of 12 mm and the mean diameter of helix is 125 mm. Determine the maximum axial load that can be applied on the spring if the maximum bending stress and the maximum shear stresses are limited to 125 N/mm² and 65 N/mm² respectively. Also determine the deflection of the spring.

7. The maximum stress permitted in a thick cylinder of internal and external radii 20cm and 30cm respectively is 15.0Mpa. If the external pressure is 4Mpa, find the internal pressure that can be applied. Plot the curves showing the variation of hoop and radial stresses through the material. What will be the change in thickness of the cylinder? Take E=200Gpa and μ =0.3.

8. A steel cylinder of 350 mm external diameter is to be shrunk over another cylinder of internal diameter 200 mm. After shrinkage the diameter at the junction is 300 mm and the radial pressure at the junction is 30 N/mm². Find the original difference in radii at the junction.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
BUILDING MATERIALS AND CONCRETE TECHNOLOGY
[Civil Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

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

2. a) Explain the process of manufacture of terra-cotta.
    b) What are the constituents of limestone.

3. a) Explain the classification of various types of woods used in buildings.
    b) Write short notes on paints and varnishes.

4. a) Explain the use of aluminium in the construction field.
    b) Describe the application of the following construction materials:
        (i) Ceramic products.
        (ii) Gypsum.

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) Describe
        i) The factors affecting the strength of concrete,
        ii) curing of concrete,
        iii) Relation between tensile and compression strength of concrete.
    b) Explain the step-by-step procedure for mix design using
        i) ACI method and
        ii) BIS method.

7. a) Explain the various types of shrinkage of concrete.
    b) Design M 25 grade of concrete with medium workability using the following data:
        Maximum size of aggregate: 20 mm
        Specific gravity of cement: 3.15
        Specific gravity of coarse aggregate: 2.60
        Specific gravity of fine aggregate (Zone I): 2.65
        Adopt IS code method.

8. Write short notes on:
        a) Self consolidating concrete.
        b) Fiber reinforced concrete.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
BASICS OF ELECTRICAL AND MECHANICAL TECHNOLOGY
[Civil Engineering]

Time: 3 hours   Max Marks: 70

(Minimum of two questions from each part should be chosen for answering five questions)
All questions carry equal marks

PART - A

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

2. a) What are the different types of DC motors 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) Explain the principle of operation of transformer and derive the relation between primary and secondary voltage.
    b) A transformer is connected to a lagging pf load. Draw its phasor diagram and write the voltage phasor expressions on primary and secondary side.

4. a) Explain the principle of operation of 3-phase induction motor.
    b) How regulation is predetermined from open circuit and short circuit test data of alternator. Explain.

PART - B

5. a) Describe the working of Oxy Acetylene gas welding. Discuss the different flames employed and their suitability.
    b) Compare Brazing and soldering and welding.

6. a) Explain the working of four stroke compression ignition engine.
    b) Write the differences between petrol engine and diesel engine.

7. a) Explain vapour compression refrigeration system with a neat sketch.
    b) What are the major advantages of vapour compression refrigeration system over air refrigeration system?

8. a) Explain the working principle of single stage air compressor.
    b) Write short notes on
        i) Concrete mixer
        ii) Belt and bucket conveyors.

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CODE No.:10BT30104

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
SURVEYING
[Civil Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) What are the various types of tape corrections and how they are applied?
    b) A 30 m chain was found to be 7 cms too long after chaining a distance of 2000 m. it was found to be 14 cms too long at the end of days work after chaining a total distance of 4000 m. if the chain was correct before the commencement of work, find the true distance.

2. a) State the advantages and disadvantages of plane table survey.
    b) Given below are the bearings observed in a traverse survey conducted with a prismatic compass at a place where local attraction was suspected.

Line	F.B	B.B
AB	$124^0 \ 30'$	$304^0 \ 30'$
BC	$68^0 \ 15'$	$246^0 \ 00'$
CD	$310^0 \ 30'$	$135^0 \ 15'$
DA	$200^0 \ 15'$	$17^0 \ 45'$

    At what stations do you suspect local attraction. Find the correct bearings of the lines and the included angles

3. a) Write the characteristics of contours.
    b) An observer standing on the deck of a ship just sees a light-house. The top of the light-house is 42 m above the sea level and the height of the observer's eye is 6 m above the sea level. Find the distance of the observer from the light-house.

4. a) Explain 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 following
       (i) Index bar   (ii) Retrograde vernier   (iii) Transiting of theodolite (iv) Levelling head of a theodolite.
    b) A closed traverse ABCDEA was run in the counter clockwise direction, and the following data were obtained.

Line	Length (m)	Included angle
AB	186	Angle A = $118^0 \ 20'$
BC	164	Angle B = $82^0 \ 10'$
CD	303	Angle C = $137^0 \ 00'$
DE	162	Angle D = $73^0 \ 44'$
EA	240	Angle E = $128^0 \ 36'$

    The bearing of AB was $24^0 \ 30'$. Determine the closing error, adjust it, and give the corrected consecutive coordinates.

6. a) What is a "Subtense Bar"? Draw a sketch of the Subtense Bar and describe the use of the Subtense Bar.
    b) Explain the Tacheometric contouring.

7. a) Derive the expression for Rankines method of tangential angle.
    b) Two straight lines AB and BC intersect at chainage (370 + 00) the deflection angle being 9^0. Find the chainages of the beginning and end points of 2^0 left hand curve joining two lines. Give the tables of deflection angles for every chain length of 30 m.

8. a) What are the advantages and disadvantages of total station?
    b) Write detailed notes on electronic distance measurement.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
FLUID MECHANICS-I
[Civil Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Derive Newton's law of viscosity. Based on the law, discuss classification of fluids giving at least one example for each type.
    b) In measuring surface tension of a mineral oil of Sp.Gr 0.85 by the bubble method, air is force to form a bubble at the lower end of the tube of internal diameter 1.5 mm immersed at a depth of 1.25 cm in the oil. Calculate surface tension of oil , if the maximum bubble pressure is 15 kgf/sq.m.

2. a) Explain how you would find the resultant pressure on a curved surface immersed in a liquid.
    b) A rectangular plane surface 1m wide and 3m deep lies in water in such a way that its plane makes an angle of 30^0 with the free surface of water. Determine the total pressure and position of centre of pressure when the upper edge of the plate is 2m below the free surface of water.

3. a) Explain Lagrangian and Eulerian methods of describing fluid motion. Of these two methods, which one is widely used ? Why?
    b) An airplane is observed to travel due north at a speed of 240 kmph in a 80 kmph wind from north-west. What is the apparent wind velocity observed by the pilot?   What is apparent wind direction?

4. a) Explain the following
        i)   Steady and unsteady flows
        ii) Uniform and non-uniform flows
        iii) Rotational and irrotational flows
    b) For a two-dimensional flow $\emptyset = 3xy$ and $\Psi = 1.5 (y^2-x^2)$. Determine velocity components at the points (1,3) and (3,3). Also find the discharge passing between the stream lines passing through these points.

5. A pipe of 400 mm diameter and 2 km long is connected to a reservoir at one end. The other end of the pipe is connected to a junction from which two pipes each of length 1 km and diameter 300 mm run in parallel. These parallel pipes are connected to another reservoir, which is having water level 10 m below that of the first reservoir. Determine the total discharge if the friction factor in all pipes is 0.02.

6. Define an orifice meter. How is it different from a venturimeter? Prove that the discharge through an orifice meter is proportional to square root of head causing flow.

7. a) Show that the value of the coefficient of friction for viscous flow through a circular pipe is given by $f=16 / R_e$, where R_e = Reynolds number.
    b) What is meant by turbulence? How does it affect the flow properties?

8. a) Explain the terms geometric similarity, kinematic similarity and dynamic similarity and discuss the difficulties faced in satisfying these three similarity laws in modelling studies.
    b) A 120m long surface vessel is to be tested by a 3m long model. If the vessel travels at 10 m/s, at what speed must the model be towed for dynamic similarity between model and prototype? If the drag on the model is 9.5 N, what is the drag force expected on the prototype?

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CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
FLUID MECHANICS AND HYDRAULIC MACHINERY
[Electrical and Electronics Engineering]

Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

1. a) An oil film of thickness 1.5 mm is used for lubrication between a square plate of size 0.9 x 0.9 m and an inclined plane having an angle of inclination 20^0. The weight of the square plate is 392.4 N and it slides down the plane with an uniform velocity of 0.2 m/s. Find the dynamic viscosity of the oil.
   b) Explain the terms (i) atmospheric pressure (ii) gauge pressure and (iii) vacuum pressure. What is the relationship between them?

2. a) 250 litres/sec. of water is flowing in a pipeline having a diameter of 300 mm. If the pipe is bent by 135°, find the magnitude and direction of the resultant force on the bend. The pressure of the water flowing is 400 kN/m². Take specific weight of water as 9.81 kN/m³.
   b) What are different types of fluid flow ? Explain.

3. a) A venturimeter is used to measure the flow of petrol in a pipeline which is inclined at 45° to the horizontal. The specific gravity of petrol is 0.81. The diameter of the pipe is 0.3 m and the throat area ratio of the venturimeter is 4. If the difference in mercury levels recorded by a differential manometer is 50 mm, determine the flow rate of petrol in l/hr. Take $C_d = 0.975$.
   b) Compare the discharge of 15 cm and 30 cm diameter CI pipes where the loss of head due to friction in each is same. Consider that both pipes are of same length and the friction factor is same.

4. a) A nozzle of 60 mm diameter delivers a stream of water at 24 m/s perpendicular to a plate that moves away from the jet at 6 m/s. Find (i) the force on the plate (ii) the work done and (iii) the efficiency of the jet.
   b) Obtain an expression for the force exerted by a jet of water on a fixed vertical plate in the direction of the jet.

5. a) Draw a general layout of a hydroelectric power plant using an impulse turbine and explain its working.
   b) Explain the various heads and efficiencies of a hydraulic turbine used in a hydroelectric power plant.

6. a) Describe the function of various main components of Pelton turbine with neat sketches.
   b) Explain the construction and working of Kaplan turbine.

7. a) Define the specific speed of a turbine. Derive an expression for the specific speed.
   b) Explain the term 'Governing of a turbine'. Describe the working of an oil pressure governer.

8. a) What are characteristic curves of a centrifugal pump? Explain in detail.
   b) A single acting reciprocating pump, running at 50 r.p.m., delivers 0.01 m³/s of water. The diameter of the piston is 200 mm and stroke length 400 mm. Determine:
   (i) theoretical discharge   (ii) co-efficient of discharge   (iii) slip and
   (iv) percentage slip of the pump.

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CODE No.:10BT30201

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
ELECTRICAL CIRCUITS
[Electrical and Electronics Engineering]

Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

1. a) Obtain the expressions for star-delta equivalence of resistive network.
    b) A circuit of three resistor 15Ω, 21Ω and 39Ω respectively joined in parallel is connected in series with fourth resistance. The whole circuit is applied with 50V and is found that the power dissipated in the 15Ω resistor is 35W. Determine the value of the fourth resistance and the total power dissipated in the circuit.

2. Find the mesh currents in the circuit shown in figure below.
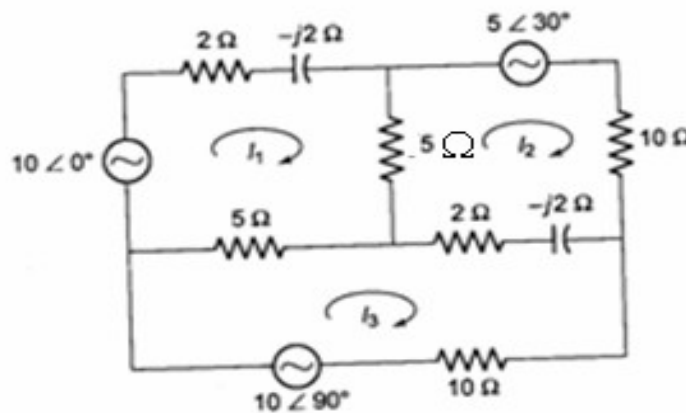
3. a) Define the following terms
        i) RMS value   ii) Average value   iii) Form factor   iv) Peak factor
    b) Determine the average and effective values of saw-tooth waveform as shown in below figure
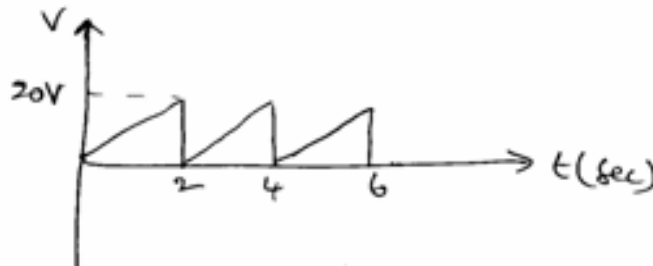
4. a) Define the Q-factor and derive an equation showing the relation between Q-factor, Band width and selectivity at resonance.
    b) In the circuit shown below, what 50 Hz voltage must be applied across A and B to have 10 A current in the capacitor.
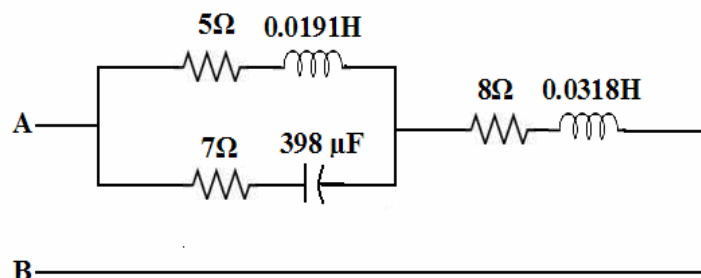
5. a) Derive the relation between phase and line values of a three phase delta connected balanced system.

b) Three inductive coils, each with a resistance of 15 Ω and an inductance of 0.03 H are connected in star to three phase, 400 V, 50 Hz supply. Calculate (i) phase current and line current (ii) total power absorbed.

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. a) State and explain Maximum power transfer theorem.

b) By using Norton's theorem find the current flowing through (5+j5) ohms impedance
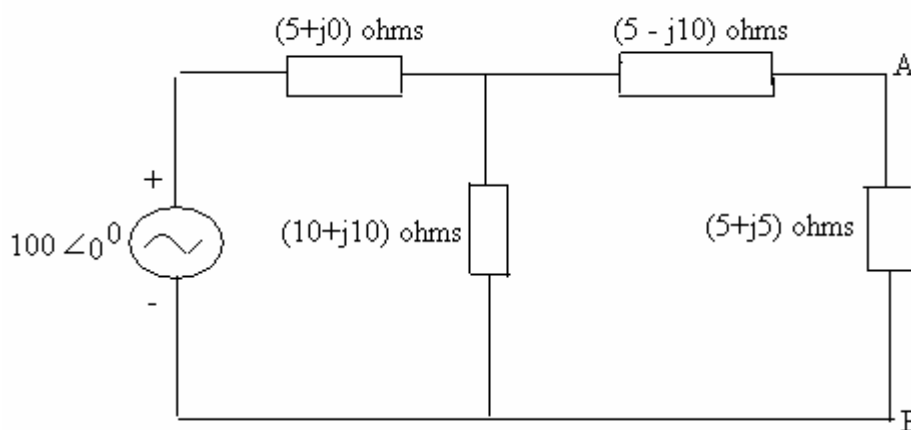
8. a) State and explain Tellegen's theorem

b) Verify reciprocity theorem for the circuit shown in below figure
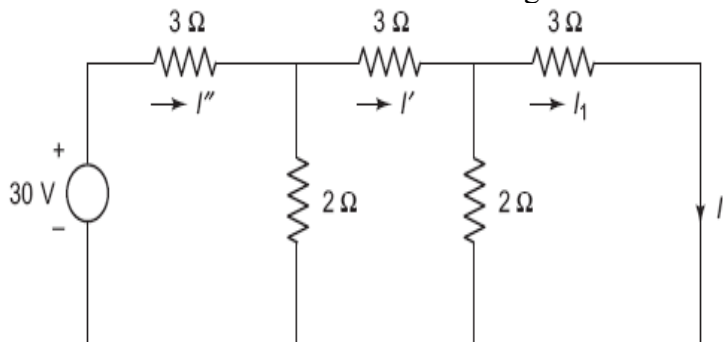
SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
DC MACHINES
**[Electrical and Electronics Engineering]**

Time: 3 hours   **Max Marks: 70**
### Answer any FIVE questions
All questions carry equal marks

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

2. a) 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) What are the conditions to be fulfilled for a DC generator to build up emf ?
    b) A 250 V, shunt generator runs at 1500 rpm when supplying a load current of 10A. Calculate the speed at which the machine is to be run to maintain the same terminal voltage when delivering a full-load current of 20A. The field flux is reduced by 5% due to armature reaction, R_a = 0.2 Ω , R_{sh} = 250 Ω .

4. a) Discuss the process of commutation in dc machines and how commutation is improved.
    b) A 4-pole wave-wound generator has 320 armature conductors and carries an armature current of 400A. If pole arc/pole pitch ratio is 0.68. Calculate the AT/Pole for compensating winding to give uniform flux density air gap.

5. a) Explain the load characteristics of DC shunt generator
    b) Two DC generators are connected in parallel to supply a load of 1500 A. One generator has an armature resistance of 0.5 Ω and an e.m.f of 400V while the other has an armature resistance of 0.04 Ω and an e.m.f of 440 V. The resistance of shunt fields is 100 Ω and 80 Ω respectively. Calculate the current supplied by the individual generators and the terminal voltages.

6. a) Derive the torque equation of a dc motor and explain the types of torques in the motor.
    b) A belt driven dc shunt generator runs at 1500 rpm delivering 10KW at 220V brushes. The belt breaks, following which the machine operates as a motor drawing 2KW power. What will be its Speed as a motor? The armature and field resistances are 0.25Ω and 55Ω respectively. Ignore armature reaction and assume the contact drop at each brush to be 1V.

7. a) Explain Ward-Leonard method of speed control in DC motors.
    b) A 250 V, dc shunt motor on no-load runs at a speed of 1000 rpm and takes a current of 5A. The armature and shunt field resistance are 0.2 and 250 Ω respectively. Calculate the speed when the motor is on-load and is taking a current of 50A. Assume that the armature reaction weakens the field by 3%.

8. a) Explain how the stray losses can be separated in a dc machine.
    b) A shunt motor running on no-load takes 5A at 200V. The resistance of the field circuit is 150Ω and of the armature is 0.1Ω. Calculate the efficiency of the motor for a load current of 120A at 200V.

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
BASIC ELECTRICAL ENGINEERING
[Computer Science and Engineering, Information Technology]

Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

1. a) Show that for pure resistance the current is in phase with the voltage and for for pure capacitance the current leads the voltage.
   b) Explain the following
       i) Fuses
       ii) Earthing.

2. a) State Thevinin's theorem and find the current in resistance R_3 of the network shown below using Thevinins theorem
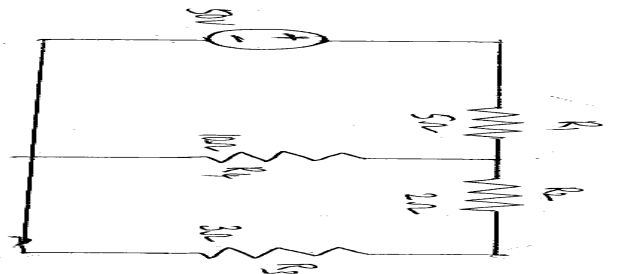
   b) Explain source transformation with respect to electric circuits.

3. a) Define
       i) Instantaneous value   (ii) Peak Value   (iii) Average value
       iv) RMS value   (v) Form factor
   b) A circuit takes a current of $I = 20\sin\left(314t - \dfrac{\pi}{6}\right)$ amperes when the voltage is

   $V = 100\sin 314t$. Calculate the impedance, phase angle, resistance and inductance of the circuit.

4. a) Differentiate between star and delta connections
   b) Three similar coils each of resistance 20Ω and an inductance of 0.5H are connected in delta across a three phase supply source of 400V, 50Hz. Calculate the values of line and phase currents and voltages and power absorbed by the circuit.

5. a) How are DC machines classified in general?
   b) Derive the torque-equation of a DC shunt motor.

6. a) Give brief constructional details of transformer.
   b) Explain the importance of slip in the operation of an Induction Motor.

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

8. a) What is meant by deflecting torque in the instruments.
   b) Classify different types of instruments.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
FOUNDATIONS OF ELECTRICAL ENGINEERING
[Computer Science and Systems Engineering]

Time: 3 hours   **Max Marks: 70**
Answer any FIVE questions
All questions carry equal marks

1. a) Define electric field, current, potential difference and electric power.
    b) Determine the value of the resistance 'R' shown in the figure below if the potential drop across it is 25 Volts.
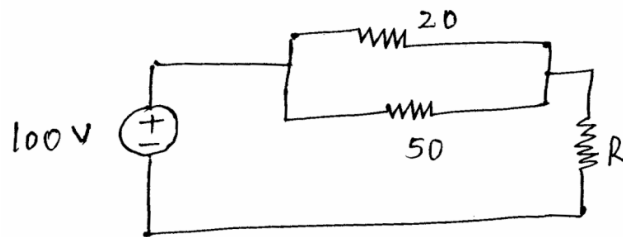
2. a) Define the following terms referred to electrical network:
       (i) Node   (ii) Loop   (iii) Branck   (iv) Path
    b) State and prove superposition theorem with the help of an example.

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. Write about different types of DC motors with neat diagrams.

5. a) Explain the principle of operation of a transformer?
    b) Name various losses that occur in the transformer and compare the efficiency of the transformer with DC. and AC. machines?

6. a) Explain about different types of controlling torques in instruments.
    b) Explain about repulsion type moving iron ammeter.

7. a) Write the differences between open loop systems and closed loop control system.
    b) Define transfer function and what are its limitations.

8. Derive the Maison's gain formula and explain signal flow graph how to find the transfer function.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

CIRCUIT THEORY

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

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Explain Kirchoff's laws with an example.
    b) Determine the voltage appearing across terminals y-z, if a d.c. voltage of 100 V is applied across x-y terminals in the figure below.
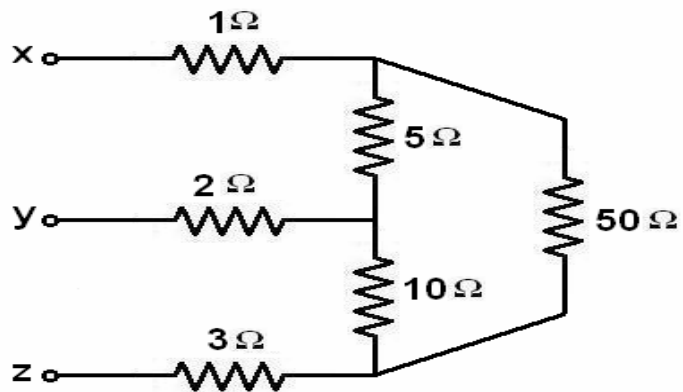
2. a) What is super node and super mesh concept explain with example.
    b) Using Kirchoff's current law, find the values of the currents i_1 and i_2 in the circuit shown in figure.
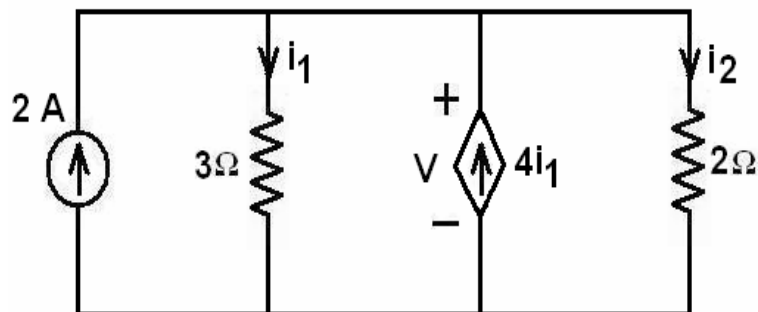
3. a) Define the following terms (i) average value (ii) RMS value (iii) Peak factor (iv) Form factor
    b) Find the average and RMS values of the following wave form. Also find form factor
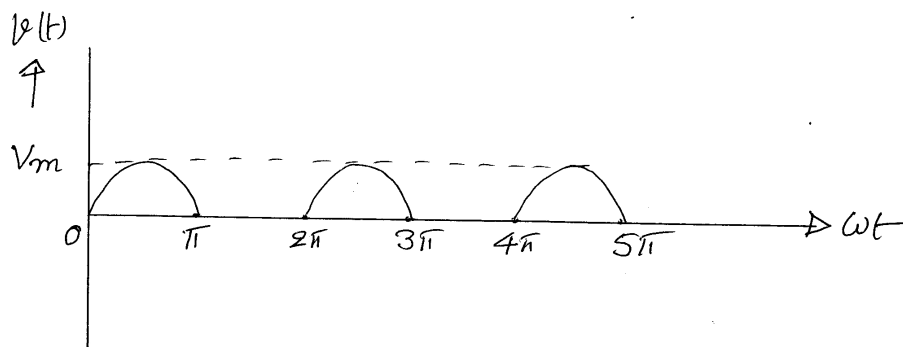
4. Find the following for a series parallel circuit shown below

a) Total impedance
b) Current drawn from supply
c) Voltage across parallel branches
d) Current in each parallel branch
e) Power factor
f) Apparent, active and reactive powers

Draw the phasor diagrams showing V,I_1,I_2 and I_3
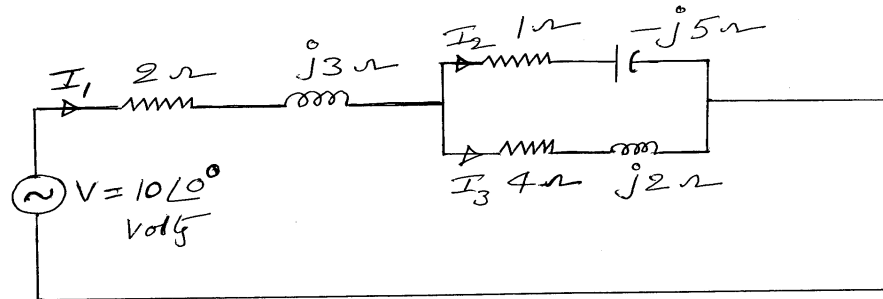
5.

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

b) A series R-L circuit with R = 30Ω and L=15H has a constant voltage V= 60 v applied at t = 0 as shown below. Determine the current I, Voltage across resistor and inductor.
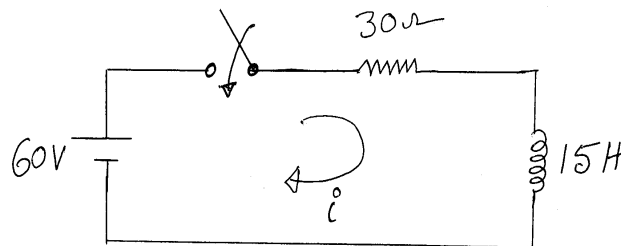
6. a) Define coefficient of coupling K and derive the relation between self inductances L_1, L_2, mutual inductance M and coefficient of coupling K.

b) Calculate the equivalent inductance of the circuit shown below between the terminals A and B.
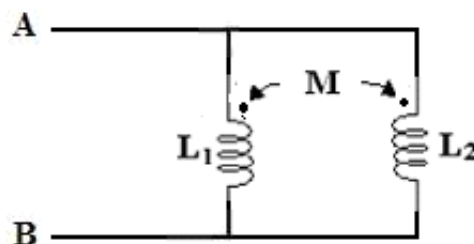
7. a) Find the current through 10 Ω resistor using Thevenin's Theorem.
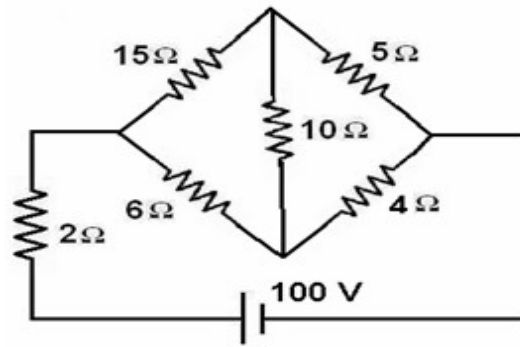
b) Find the current through 6Ω resistor using Superposition theorem as shown in figure.
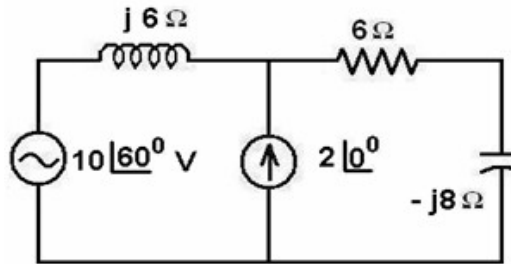
8. a) State and explain Reciprocity theorem.
   b) Verify the Telligen's theorem for the circuit shown below.
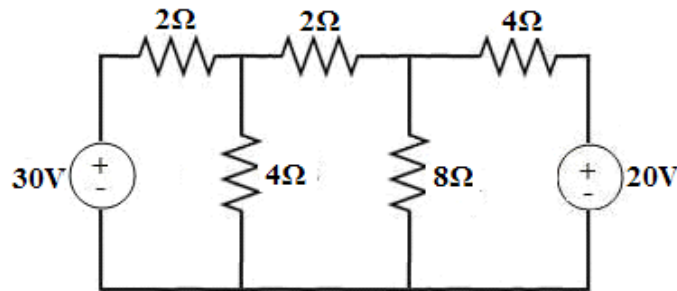
SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
SEMICONDUCTOR DEVICES AND CIRCUITS
[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) 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) Derive the expressions for ripple factor, efficiency, percentage regulation of Bridge Rectifier
   b) Design a Filter for a Full wave circuit with LC filter to provide an output voltage of 10V with a load current of 200mA and ripple factor is 0.02

3. a) Explain Input and Output characteristics of transistor qualitatively under CE configuration
   b) A Transistor has β= 150 find collector and Base currents if I_E=10 mA

4. a) Derive an expression for stability factor S in self bias circuit.
   b) What is thermal runaway and what is the condition for thermal stability in CE configuration

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

6. a) State advantages and disadvantages of FET's over BJT's.
   b) Discuss the relationship between FET parameters.

7. Derive the expressions for voltage gain and Input admittance and output resistance of a common source amplifier.

8. a) Write clearly about the characteristics of SCR with all required diagrams.
   b) Write about η and its significance in UJT

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
PROBABILITY THEORY AND STOCHASTIC PROCESSES
[Electronics and Communication Engineering]

Time: 3 hours   Max Marks: 70

**Answer any FIVE questions**
All questions carry equal marks

1. a) 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

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

2. a) Define and explain the following density functions
                   i) Uniform   ii) Rayleigh
    b) A Gaussian random variable X has a_x=2 and $\sigma_x \sigma_x$=2
                   i) Find P(X>1.0)   ii) find P(X≤-1.0).

3. a) When two dice are thrown ,find the expected value of the sum of number of points on them.
    b) If the random variable X has a mean of 8, a variance of 9 and an unknown probability distribution Find (i)p(-4<X<20) (ii) p(!X-8!≤6).
    c) If the random variable X has uniform distribution, find its variance.

4. a) Define conditional distribution and density function of two random variables X and Y
    b) State the Central Limit theorem.
    c) Three statistically independent random variables X_1, X_2, and X_3 are defined by

$$\bar{X}1 = -1 \qquad \sigma_{x1}^2 = 2.0$$
$$\bar{X}2 = 0.6 \qquad \sigma_{x2}^2 = 1.5$$
$$\bar{X}3 = 1.8 \qquad \sigma_{x3}^2 = 0.8$$

Write the equation describing the Gaussian approximation for the density function of the sum X= X_1+X_2+X_3.

5. a) Two statistically independent random variables X and Y have mean values $\overline{X} = E(X) = 2$ and $\overline{Y} = E(Y) = 4$. Thus have second moments $\overline{X^2} = E(X^2) = 8$ and $\overline{Y^2} = E(Y^2) = 25$. Find the mean values, the variance of the random variable $W = 3X - Y$.

b) Two random variables X and Y are related by the expression $Y = aX + b$, where a and b are any real numbers. Show that this covariance is $C_{XY} = a\sigma_X^2$ where σ_X^2 is the variance of X.

6. a) Define a Kth -order stationary random process. When it will become a SSS Process?

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

7. a) Explain about auto and cross correlation function properties.

b) Explain about Poisson random process.

8. a) Define what is white noise and explain the different types of noise.

b) Write on power density spectrum of response.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
SIGNALS AND SYSTEMS
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours   **Max Marks: 70**
Answer any FIVE questions
All questions carry equal marks

1. a) 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. a) What are the Dirichlet conditions? Derive the formulae for Fourier Coefficients.
    b) Find the trigonometric Fourier series of the waveform as shown in the figure.
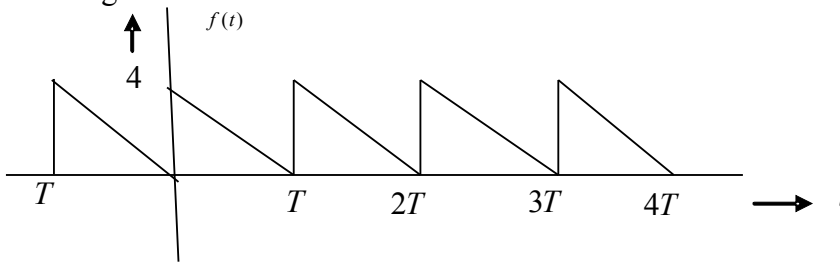
3. State and prove the
       (i) Modulation theorem of Fourier transforms.   (ii) Duality property of Fourier transforms.

4. Transfer function of a LPF is given by
       H (w) =   1, |w| < w_c
                 0, |w| > w_c
    Show that its impulse response is non-causal.
    What do you do to make it causal? What is its Physical significance?

5. a) State and prove the initial valve and final value theorem of Laplace transform.
    b) Determine the inverse Laplace transform of $X(S) = \dfrac{2(S+2)}{S^2 + 7S + 12}$ Re(S)>-3.

6. a) Determine the convolution of the following functions graphically.
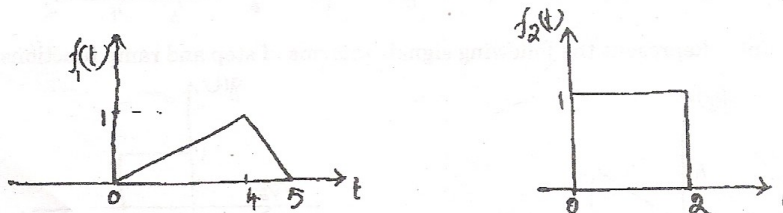
    b) Obtain and sketch the Impulse Response of the system
$$y(t) = x(t - t_\circ)$$

7. a) Determine the Laplace transform and sketch the pole-zero plot of the following signals
       (i) $x(t) = e^{-t}\cos(2t)$ (ii) $te^{-t}u(t)$
    b) Obtain the inverse transform of $F(s) = \dfrac{1}{s(s+10)(s-3)}$ using partial fraction method.

8.

a) Find Z-Transform and ROC for the Signal $x(n) = \left(\dfrac{1}{3}\right)^{n} \sin\left(\dfrac{\pi}{4}n\right) u(n)$

b) Find inverse z-transform of the following functions.

  i) $x(z) = \dfrac{z}{(z-1)(z-2)} \quad 1 < |z| < 2$

  ii) $x(z) = \dfrac{z}{(1-0.5z^{-1})(1-0.25z^{-1})}$

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CODE No.:10BT30421

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
ELECTRONIC DEVICES AND CIRCUITS
[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Differentiate Avalanche and Zener breakdown mechanisms.
     b) Explain the V-I characteristics of PN junction diode and distinguish between the characteristics of Silicon and Germanium diodes.

2. a) Draw the circuit diagram of half-wave rectifier and explain the working with relevant input and output waveforms.
     b) Show that the ripple factor is full wave rectifier is 0.48.

3. a) Derive the relation between the BJT parameters α, β^* and γ.
     b) Draw the circuit diagram of NPN junction transistor in CE configuration and describe its characteristics.

4. a) What is the need for biasing and explain load line analysis to find best operating point.
     b) Explain about voltage divider bias with thevenin equivalent circuit. And find the stability factor S.

5. a) Explain about simplified hybrid model for CE configuration and find A_i, R_i, A_v and R_o .
     b) Write typical values for CB, CE, and CC configuration.

6. a) With neat sketch explain the characteristics of MOSFET in enhancement mode.
     b) Draw the circuit diagram of common source amplifier and derive equation for gain of the amplifier.

7. a) Discuss the different types of feedbacks used in amplifier circuits.
     b) Draw the circuit of RC phase shift oscillator and explain its operation.

8. Discuss about :
               (i) SCR and its applications.
               (ii) UJT and its applications.

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CODE No.:10BT30422

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
DIGITAL LOGIC DESIGN
[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Represent decimal number 8620 in
           i) BCD
           ii) Excess-3code
           iii) Octal
           iv) Binary
      b) Perform the following subtraction using 2's complement
           i) 11011 - 10100
           ii) 11100 - 00100

2. a) State and explain De Morgan's laws. Draw the logic diagram and construct the truth table for
           X = A+B+ (DC).
      b) Reduce the expression A+B [AC+ (B+C') D].

3. a) Explain two -level and multi-level realization.
      b) Determine the canonical sum of products and product of sums of A'B+ABC+C'B'.

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) Explain the circuit diagram of a S-R Flip-Flop using 2- input NOR gates.
      b) Explain State diagram and State table.

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) Draw and explain the block diagram of PAL.
      b) Explain in detail about SRAM and DRAM.

8. a) Explain why asynchronous inputs called overriding inputs.
      b) Explain the operation of RS clocked Flip-Flop with logic diagram.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
DISCRETE MATHEMATICAL STRUCTURES
[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]
Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

1.
a) Write down the De Morgan laws and prove them.
b) For any propositions p, q, r prove the following logical equivalence:
$(p \to q) \wedge [\sim q \wedge (r \vee \sim q)] \Leftrightarrow \sim (q \wedge p)$.

2.
a) Show that $R \wedge (P \vee Q)$ is a valid conclusion from the premises
$P \vee Q, \; Q \to R, \; P \to M$ and $\sim M$.

b) What is the first order predicate calculus statement equivalent to the following?

"There is exactly one person whom every body loves"

3.
a) Let m be a positive integer greater than 1. Prove that the relation
$R = \{(a,b) : a \equiv b(\mod m)\}$ is an equivalence relation on the set of integers.
b) Draw Hasse diagram for the partial ordering $\{(A, B): A \le B\}$ on the power
set $P(S)$, where $S = \{a, b, c\}$

4.
a) If a ,b are any two elements of a group $(G,0)$ which commute show that
     i. a^{-1} and b commute
     ii. b^{-1} and a commute and
     iii. a^{-1} and b^{-1} commute.
b) Let g be a homomorphism from a group $\langle G, * \rangle$ to a group $\langle H, \Delta \rangle$, and let k be the
kernel of g and $H' \subseteq H$ be the image set of g in H. Then G/K is isomorphic to H'.

5.
a) Prove that $1^2 + 2^2 + \dots + n^2 = n(n+1)(2n+1)/6$ wenever n is a positive integer
b) How many ways are there for 10 red balls, 8 green balls and 6 blue balls to be in a line so that
at least 2 balls of same color must be placed side by side?

6.
a) Use generating functions to determine the number of different ways 10 identical balloons
can be given to four children if each child receives at least two balloons.
b) Use generating functions to solve the recurrence relation $a_k = 5a_{k-1} - 6a_{k-2}$ with initial conditions
$a_0 = 6$ and $a_1 = 30$.

7.
a) Distinguish between Euler circuits and Hamiltonian circuits?
b) Give an algorithm to find articulation point of a graph?

8.
a) Give the Prim's algorithm of generating minimum spanning tree?
b) Give the algorithm for depth first search?

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CODE No.:10BT30502

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
DATA STRUCTURES
[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]
Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

1. Write a C program for implementing merge sort algorithm to arrange elements in the ascending order. And also demonstrate the working of Merge Sort algorithm for the list of integers: 35, 1, 23, 5, 22, 28, 44, 6, 29, and 38.

2. Describe how to implement the stack ADT using two queues, assuming that the queue support constant time push, pop and size methods. What is the running time of pop() and push() methods in this case?

3. a) Suppose T is a binary search tree and having 'n' nodes / elements. What could be the maximum height of this binary search tree?
   b) What are the data structures that maintain height of binary search trees as log n always? And also explain how are they maintaining the height as always log n?

4. *Inorder* traversal and *postorder* traversal of a binary tree are same and is: *ABCDEFGH*. Find the binary tree, and give its *preorder* traversal.

5. Given the following Binary Tree show the result of deleting 12, 15, 2, 7 after every delete the resultant tree will be the input for next delete. After these operations insert 1, 23, 8, 16, 4, 19 into the resultant Binary Search Tree.
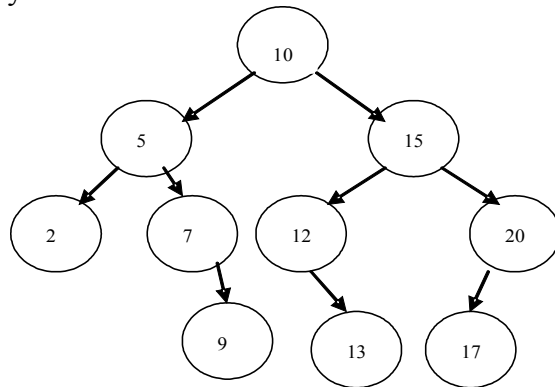
6. a) Stack can be implemented using an array and a linked list. Write C program to execute all operations of stack by considering both the implementations.
   b) Discuss the advantages and disadvantages of these two implementations.

7. a) Give Kruskal'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) 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.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
THERMODYNAMICS AND FLUID MECHANICS
[Electronics and Instrumentation Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

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

2. a) Derive an expression for the air standard efficiency of an Otto cycle.
    b) Differentiate between rotary and positive displacement compressors.

3. a) Explain with a neat sketch about simple Rankine cycle mentioning its applications.
    b) Explain the working principle of any one type of boiler accessories.

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

5. a) Deduce an expression for hydro static force acting on vertical plane submerged in
       a static liquid
    b) Define the following
            i) surface tension
            ii) capillarity iii) viscosity.

6. a) Explain the classification of various fluid flows.
    b) Determine the stream function for (i) Forced vortex and (ii) Free vortex.

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

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

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
BIO CHEMISTRY
[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write the structures of any two 5C aldoses and 6C ketoses.
    b) What are enantiomers? Explain glucose enantiomers.
    c) What are disaccharides? Cite four examples and write cyclic structures of any two of them.
    d) What is mutarotation?

2. a) Broadly describe the enzyme inhibitors.
    b) Define Km & K cat.

3. a) In a typical cell at 37 $^{\circ}$C the concentration of ATP = 8×10^{-3} M, ADP = 1×10^{-3} M, and Pi = 8×10^{-3} M. What is the actual free energy change (ΔG') for ATP hydrolysis under these conditions?
    b) Write a short note on Entropy and Enthalpy.

4. a) Define laws of thermo dynamics.
    b) Define and explain enthalpy, entropy and free energy change.
    c) Relation between equilibrium constant and slandered free energy change.

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

6. a) Describe glutamate Pathway.
    b) Write about the serine synthesis process.

7. Give an account of biosynthesis and degradation of Lipids.

8. a) Draw the structure of ATP?
    b) What are different types of DNA and compare with one another?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
MICRO BIOLOGY
[Bio-Technology]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. Write briefly of the following:
    a) Robert Koch contributions
    b) Germ theory
    c) Edward Jenner contributions
    d) F.W.Twort contributions

2. Write the systematic classification of Bacteria.

3. Write the role of micro and macro nutrients to help the microbial growth.

4. Explain different types of Bacterial staining techniques.

5. List out various methods used in preservation of microbes and write the limitations.

6. Write various modes of infection of Microbes to the humans with suitable examples.

7. Discuss about Hepatitis B Virus with special reference to vaccine development.

8. Write a note on:
    a) Assay of animal viruses
    b) Methods used for identification of viruses.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
FLUID FLOW IN BIOPROCESSES
[Bio-Technology]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. Write about the application of engineering principles in biotechnology.

2. a) Using only exact definitions and standards, calculate factors for converting (i) British thermal units to IT calories and (ii) atmospheres to pounds force per square inch.
    b) An aqueous solution of NaCl has a concentration of 24 wt % NaCl with a density of 1.178 g/cm^3 at 25ºC. Calculate the following: i) Mole fraction of NaCl and water.
    (ii) Concentration of NaCl as g mol/liter, lb_m/ft^3.

3. a) Explain the concept of streamlines.
    b) Discuss about flow in boundary layers, its formation and growth in tubes and over plates.

4. a) What are the Newtonian and non-Newtonian fluids? Explain with a shear stress and shear rate plot.
    b) Write a short note on the following with suitable mathematical expressions:
        i)   Bingham plastic fluids
        ii) Pseudoplastic fluids
        iii) Dilatant fluids

5. a) Discuss the concept of the Reynold's number.
    b) An oil having viscosity of 1.42 poise and specific gravity 0.9 flows through a pipe 25 mm diameter and 300 m long at Reynolds number of 1800. Find the flow through the pipe and the power required to maintain the flow.

6. a) An aeroplane flies at Mach 0.8 in air at 15^0C and 100 Kpa pressure. Calculate the stagnation pressure and temperature. Take γ=1.4.
    b) Explain the process of compressible flow in detail.

7. a) Discuss the concept of terminal velocity.
    b) 7000 kg/hr of air, at a pressure of 7 atm abs and a temperature of 127ºC is to be passed through a cylindrical tower packed with 2.5 cm Berl saddles. The height of the bed is 6 m. What minimum tower diameter is required, if the pressure drop through the bed is not to exceed 500 mm of mercury? For Berl saddles, $D_p = (1.65 \times 10^5 \, Z \, V_s^{1.82} \, r^{1.85})/D_p^{1.4}$ where D_p is the pressure drop in kgf/cm^2, Z is the bed height in meter, r is the density in g/cc, D_p is nominal diameter of Berl saddles in cm, V_s is the superficial linear velocity in m/sec.

8. Write short notes on: a) Reciprocating pumps b) Rotary pumps c) Centrifugal pumps.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
SWITCHING THEORY & LOGIC DESIGN
[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Convert the following numbers.
        i) $(26153.7406)_8$ to binary
        ii) Convert $(2AC5.D)_{16}$ to binary and then to octal.
        iii) $(1032.2)_4$ to decimal
    b) i) Convert gray code 101011 into its binary equivalent.
        ii) Use 2's complement to perform M - N with the given number M=1010100 N=1000100

2. a) Implement the following logical expression using AND-OR-INVERTER gates and also using only NOR gates. A + BC'(D' + BE')
    b) Prove the following using Boolean algebra
    i) y'z' + w'x'z' + w'xyz' + wyz' = z'
    ii) ABC + A'B'C + A'BC +ABC' + A'B'C' = A'B' + B(A + C).

3. Simplify the following expressions using K-Map
    i) F = A'B'C'D + AB'C'D + A'B'CD + ABCD' + AB'CD' +A'B'C'D
    ii) F (A,B,C,D) = Σm (5,6,7,12,13) + Σd(4,9,14,15).

4. a) Implement a Full adder with a decoder and two OR-Gates
    b) Design BCD to Gray code converter and realize using logic gates.

5. a) Design a combinational using a PROM . The circuits accept 3 bit binary number and generate its equitant Excess-3 code.
    b) Derive the PLA programming table for the combinational circuit that squares a 3 bit number.

6. a) Convert D Flip-Flop into T Flip-Flop?
    b) Design a MOD8 synchronous counter using T Flip-Flops?

7. For the given minimal state table:
        a) Give proper assignment.
        b) And design the circuit using D Flip-Flops.

P S	Next state,		output	
	X=0	X=1	X=0	X=1(Z)
q1	q2	q1	0	0
q2	q3	q1	0	0
q3	q4	q5	0	0
q4	q4	q1	0	0
q5	q2	q1	1	0

8. a) Explain the features of ASM chart?
    b) With an example, explain about sequential binary multiplier?

SREE VIDYANIKETHAN ENGINEERING COLLEGE
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II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2012
ELECTRICAL & ELECTRONIC MEASUREMENTS
[Electronics and Control Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) List out the different types of ammeters and voltmeters and explain any two of them.
    b) A moving iron voltmeter gives a sufficiently accurate maximum reading of 25volts d.c. The resistance of the operating coil is 250 ohms and its inductance is 100 mH. Calculate its percentage error when used to measure 25 volts 50 c/s a.c.

2. a) Define the Ohm Meter and list out the types of Ohm Meters and explain any one of them.
    b) A series ohmmeter has a movement of 55ohms internal resistance. If full-scale deflection current is 1.1 mA, internal battery voltage is 2.8V, and the desired scale marking for half-scale deflection is 1350 ohms. Determine the
        i) R_{se} and R_{sh}
        ii) Maximum value of R_{sh} to compensate for a 9.5 percent drop in battery voltage
        iii) Scale error at the half - scale mark when R_{sh} is not set as **is** case (i).

3. a) List out the types of Energy Meters and explain with a neat sketch of Induction Watt- Hour Meter.
    b) An induction watt -hour meter is designed to make 600 revolutions of the disc for 1KWH. Determine the number of revolutions that the disc should makes when a current of 10 amperes at a power factor of 0.8 passes through it for 2 hours at 230V. Determine the percentage error if the actual number of revolutions is 2250.

4. a) Explain the working principle of Schering bridge and derive an expression for measurement of unknown capacitor.
    b) Explain Wagnar ground connection and show that it minimizes the stray capacitance effects in bridge circuit

5. a) Describe the principle operation of duel slope DVM.
    b) With neat diagram explain the working principle of successive approximation DVM.

6. a) How does a spectrum analyzer functionally differ from a wave analyzer and explain spectrum analyzer with respect to parallel filter bank analyzer?
    b) What are the applications of a waveform analyzer and explain the resonant and heterodyne wave analyzers using their suitable diagrams.

7. a) How is CRO superior to ordinary measuring instruments and describe the construction and working of a CRO.
    b) How much voltage is required across two deflection plates separated by 1 cm to deflect on electron beam 1^0 if the effective length of the deflection plates is 2.5 cm and the accelerating potential is 1kv? Deduce the formula used.

8. a) Draw the block diagram of Harmonic distortion analyzer and explain its operation.
    b) What are the differences between a wave analyzer and a Spectrum Analyzer?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10-RA) Regular Examinations May - 2012
ENGINEERING CHEMISTRY
[Electrical and Electronics Engineering]

Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

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

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

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

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

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

6. a) State Beer-Lambert's law. What are its limitations?
    b) Give a brief account on group frequencies in IR spectroscopy.

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

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CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
PROBABILITY AND STATISTICS
[Civil Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove multiplication theorem.
   b) If A and B are independent, show that A and B^C are also independent.

2. a) Suppose that 4% of all TVs made by A&B Company are defective. If eight of these TVs
      are randomly selected from across the country and tested, assuming that each TV is
      made independently of the others, what is the probability that
      i)   At least one will be defective
      ii) 4 will be defective
      iii) 5 will be non defective
   b) A random variable X has a normal distribution with mean 80 and standard deviation 4.8.
      What is the probability that it will take a value
      i)   Less than 87.2
      ii) Greater than 76.4
      iii) Between 81.2 and 86.0.

3. a) Compute the co efficient of correlation between X and Y using the following data

X	65	67	66	67	68	69	70	72
Y	67	65	68	68	72	72	69	71

   b) The two regression equations of the variable X and Y are
      X= 19.13-0.87 Y and Y = 11.64-0.50 X
      Find (i) mean of X's   (ii) Mean of Y's   (iii) The correlation coefficient between X and Y.

4. a) 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
      i) Null hypothesis   ii) Type - I error   iii) Type - II error

5. a) A large sample of 200 students from the students of a certain high school is interviewed
      and 85 of them are found to use city buses. Can you conclude that at least 40% (P>0.40)
      of the students use city bus? Use a 0.05 level of significance.
   b) A random sample of 100 recorded deaths during the past year showed an average life span
      of 71.8 years. Assuming a population standard deviation of 8.9 years, does this seem to
      indicate that the mean life span today is greater than 70 years? Use a 0.05 level of significance.

6. a) Test the hypotheses that the average height content of containers of certain lubricant is 10 liters if the contents of a random sample of 10 containers give a mean of 10.06 with standard deviation of 0.25. Use the 0.01 level of significance and assume that the distribution of contents is normal.

b) Based on the given table, test the hypothesis that the time spent while drawing a given design is independent of whether the designer is male or female. (use 0.05 level of significance and chi-square test)

Time	Sex	
	Male	Female
< one hour	75	55
>One hour	90	100

7. The height content of containers of certain 10 lubricants are: 10.2, 9.7, 10.1, 10.3, 10.1, 9.8, 9.9, 10.4, 10.3, and 9.8 liters. Can we say that the process is in state of statistical quality control.

8. a) A super market has two girls attending to sales at the counters. If the service time for each customer is exponential with mean 4 min and if people arrive in Poisson fashion at the rate of 10 per hour,
1) What is the probability that a customer has to wait for service?
2) What is the expected percentage of idle time for each girl?
3) If the customer has to wait in the queue, what is the expected length of his waiting time?

b) A bank plans to open a single server drive-in banking facility at a certain centre. It is estimated that 20 customers will arrive each hour on average. If on average, it requires 2 minutes to process a customer's transaction, determine
i) The operation of time that the system will be idle;
ii) On the average, how long a customer will have to wait before reaching the server,
iii) The fraction of customers who will have to wait.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
ENVIRONMENTAL SCIENCES
[Civil Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

1. a) What is mean by Environment? Explain the different strategies of Environment.
    b) Explain the various components of the environment.

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

3. a) Write an essay on "Aquatic Ecosystem".
    b) Discuss the different types of ecological pyramids.

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

5. a) Describe different kinds of pollution on the biosphere.
    b) What are the causes, effects and disposal methods of solid waste?

6. a) Explain the concept of sustainable development.
    b) Explain the acid rain and its impacts. How can we avoid it?

7. a) Write an essay about rain water harvesting.
    b) What is Green House Effect and Global Warming? How it is caused?

8. Explain the following:
    a) Objectives of field visit.
    b) Causes and effects of occupational health hazards.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
OPTIMIZATION TECHNIQUES
[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain various steps involved in formulation of objective function and constraints.
    b) Classify the optimization problems.

2. a) Find the dimensions of a cylindrical tin (with top and bottom) made up of sheet metal to maximize its volume such that the total surface area is equal to $A_0 = 24\pi$.
    b) Find the maxima and minima, if any, of the function $f(x) = 4x^3 - 18x^2 + 27x - 7$.

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

6. Perform four iterations of Powell's method to minimize the function $f = 4x_1^2 + 3x_2 - 5x_1x_2 - 8x_1$ from the starting point (0,0).

7. Explain interior penalty method. Using this
    Minimize $\frac{1}{4} (x_1+1)^4 + x_2$.
    subject to $x_1 - x_2 \geq 0$
    $\qquad\qquad x_2 \geq 0$
    using exterior penalty function method.

8. Four types of machine tools are to be installed (purchased) in a production shop. The costs of the various machine tools and the number of jobs that can be performed on each are given below.

Machine Tool Type	Cost of Machine Tool ($)	Number of Jobs that can be performed
1	3500	9
2	2500	4
3	2000	3
4	1000	2

If the total amount available is $10,000, determine the number of machine tools of various types to be purchased to maximize the number of jobs performed. *(Note:* The number of machine tools purchased must be integers.)

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY
[Computer Science and Engineering, Bio-Technology]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

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

2. What is meant by Break Even Point? Calculate Break Even Point (in Rs.) from the given data: Fixed Cost- Rs.25,000, Variable Cost -Rs.30, Selling Price per unit - Rs.50

3. What are the characteristics of perfect competition? How does the equilibrium of the firm under perfect competition differ from that of a monopolist?

4. What is partnership? What are the points of distinction between partnership and Joint Stock Company?

5. Prepare a Trial Balance from the following account balances

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

6. From the following Trial Balance of Evergreen Company Limited prepare Trading and Profit and Loss account and Balance Sheet.

S.No	Particulars	Debit(Rs.)	Credit (Rs.)
1	Cash in Hand	2,400	
2	Purchases	2,40,000	
3	Stock as on 01-01-2010	70,000	
4	Debtors	1,00,000	
5	Plant & Machinery	1,20,000	
6	Furniture	30,000	
7	Bills Receivable	40,000	
8	Rent & Taxes	20,000	
9	Wages	32,000	
10	Salaries	37,600	
11	Capital		2,00,000
12	Bills Payable		44,000
13	Creditors		48,000
14	Sales		4,00,000
	TOTAL	6,92,000	6,92,000

Additional Information
1. Closing Inventory as on December, 31, 2010 -Rs.50,000
2. Outstanding Wages   - Rs.5,000
3. Depreciation on Plant & Machinery at 10% and Furniture at 5%.

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

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

8. Distinguish between Manual Accounting and Computerized Accounting.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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II B.Tech II Semester (SVEC10-RA) Regular Examinations May - 2012
PROBABILITY THEORY AND STOCHASTIC PROCESSES
[Electronics and Instrumentation Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Define sample space, event, continuous and discrete sample space.
   b) Define joint, conditional probabilities and statistical independence.
   c) A single card is drawn from 52-card deck
       (i)   What is the probability that the card is a jack?
       (ii) What is the probability that the card is red 10?
       (iii) What is the probability that the card will be 5 or smaller?

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

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

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

3. a) Let X be a random variable with exponential density function

$$f_x(x) = \begin{cases} y_b\, e^{-(x-a)/b} & x > a \\ 0 & x < a \end{cases}$$

   Find out its mean and variance.
   b) Show that the second moment of any random variable 'X' about arbitrary point 'a' is minimum when $a = \overline{X}$.

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

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

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

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

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

5. a) Two statistically independent random variables X and Y have mean values $\overline{X} = E(X) = 2$ and $\overline{Y} = E(Y) = 4$. Thus have second moments $\overline{X^2} = E(X^2) = 8$ and $\overline{Y^2} = E(Y^2) = 25$. Find the mean values, the variance of the random variable $W = 3X - Y$.

b) Two random variables X and Y are related by the expression $Y = aX + b$, where a and b are any real numbers. Show that this covariance is $C_{XY} = a\sigma_X^2$ where σ_X^2 is the variance of X.

6. a) Define a Kth -order stationary random process. When it will become a SSS Process.

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

7. a) Explain about auto and cross correlation function properties.

b) Explain about Poisson random process.

8. a) State and Prove wiener-Khinchin relations.

b) Prove that Sxx (ω) = Sxx (-ω).

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10-RA) Regular Examinations May - 2012
THERMODYNAMICS AND FLUID MECHANICS
[Electronics and Instrumentation Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

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

2. Explain the working principle with neat sketches of Single and multistage compressors.

3. a) 0.1 m^3 of steam at a pressure of 30 bar and dryness fraction 0.85 expands to 4.2 bar.
        Calculate the dryness of steam at end of expansion, work done and heat flow from
        or to the cylinder if (i) the expansion is hyperbolic, and (ii) the expansion is
        isentropic. If the latter is represented by the equation $PV^n = C$.
    b) Represent the Rankine cycle on p-v and T-s plots.

4. a) Define Thermal conductivity of the material.
    b) The inner surface of a plane brick wall is at 40^0C and the outer surface is at 20^0C. Calculate
        the rate of heat transfer per m^2 of surface area of the wall, which is 250mm thick. The thermal
        conductivity of the brick is 0.52 W/mK.

5. a) Define the terms i) specific gravity ii) viscosity iii) specific weight
    b) Differentiate among atmospheric, gauge, absolute pressures.

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

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

8. a) Explain the working principle of Centrifugal and Reciprocating pumps.
    b) What is hydraulic turbine? Explain its classification.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
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.
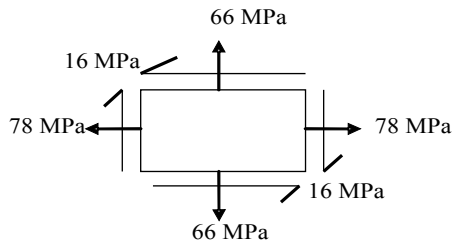
Fig.1

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.
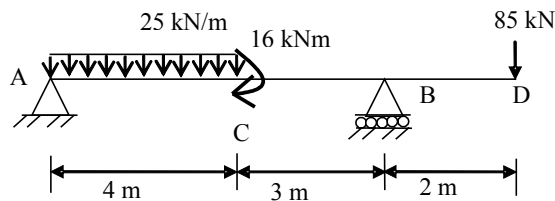
Fig.2

3. a) State and prove Moment area theorem 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. What are the assumptions made in the Euler's theory? Derive the Euler's critical load formula for long column with one end fixed and the other end free.

5. A body is under the action of two principal stresses of 40 N/mm^2 and -70 N/mm^2, the third principal stress being zero. If the elastic limit in simple tension as well as compression is 200 N/mm^2, find the factor of safety, based on the elastic limit according to the five theories of failure. Take μ =0.3.

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

7. A fixed beam AB is having a span of 6 m. Two concentrated loads of 75 kN and 50 kN acts on the beam respectively at 2 m and 4 m from the left support A. Find the fixing moments at the ends and reactions at the supports. Also draw SFD and BMD.

8. A cantilever beam of symmetrical I section with 2m span is subjected to a concentrated load of 30kN inclined 45^0 to the vertical at the free end of the cantilever. Determine the deflection at the free end of the cantilever. The cross section is symmetrical I section with flange size 125mm x 10mm and web 200mm x 8mm. Take E=200GPa.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
FLUID MECHANICS - II
[Civil Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) What is meant by boundary layer? Why does it increase with distance from the upstream edge?
   b) Define the terms: boundary layer thickness, drag, lift and momentum thickness.
   c) What do you mean by boundary layer separation? What is the effect of pressure gradient on boundary layer separation?
   d) What do you understand by total drag on a body, resultant force on a body, co-efficient of drag and co-efficient of lift?

2. a) Discuss the aspect of most economical section of a channel. Derive the condition for maximum flow carried in a rectangular channel section.
   b) Water flows at a uniform depth of 2 m in a trapezoidal channel having a bottom width 6 m and side slope 2H : 1V. Compute the bed slope, if it has to carry a discharge of 65 cumec. Take Manning's N = 0.025.

3. a) Stating clearly the assumptions made, derive dynamic equation for a GVF in a wide rectangular channel.
   b) A rectangular channel, 2.0 m wide, carries a discharge of 1.5 cumec. At a certain section of the channel depth of flow is 0.3 m. Determine whether a hydraulic jump will occur and if so, find its height and loss of energy per kg of water.

4. a) Show that the efficiency of a free jet striking normally 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. An inward flow reaction turbine discharges radially and the velocity of flow is constant and equal to the velocity of discharge from the turbine. Show that the hydraulic efficiency is given by $\eta_h = \dfrac{1}{\left[1 + \dfrac{\frac{1}{2}\tan^2\alpha}{1 - \dfrac{\tan\alpha}{\tan\theta}}\right]}$.

6. a) Explain different unit and specific quantities? Under what conditions are they useful?
   b) A turbine operates under a head of 32 m at 250 rpm. If the discharge is 9 cumec and efficiency is 90%, calculate power generated by the turbine and its specific speed.

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

8. a) What do you understand by flow duration curve? How is it prepared? What is its practical application?
   b) Explain i). Load factor ii) utilization factor iii) Capacity factor. What are their practical applications?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
REINFORCED CEMENT CONCRETE STRUCTURES - I
[Civil Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between balanced, under reinforced and over reinforced sections. Explain why the over reinforced design is not advisable.
    b) A singly reinforced concrete beam of effective span 6 m has a rectangular section 300 mm wide by 650 mm deep. The beam is reinforced with 4 bars of 25 mm diameter at an effective depth of 600mm. The superimposed dead load on the beam is 6 kN/m. Calculate the maximum permissible live load on the beam. Adopt M 20 grade concrete and Fe 415 grade steel. Adopt Working stress method.

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 415 grade Steel.
    b) Determine the ultimate moment of resistance of the T- beam section with effective width of flange 1050mm,width of rib 250mm,effective depth of the beam 540mm, thickness of flange 120mm and area of steel of 2250mm^2.Use M20 grade concrete and Fe 415 grade steel.

4. A continuous beam with simple supports has two spans each 5.7 m c/c. The beam is subjected to a characteristic dead load of 20 kN/m and characteristic live load of 25 kN/m. Design the beam and draw the reinforcement detailing.

5. Design the reinforcement of a 450 mm × 450 mm column of unsupported length 3.6 m subjected to an axial load of 1500 kN with bi-axial moments 175 kNm and 125 kNm. Use M 20 concrete and Fe 415 steel.

6. a) Design a reinforced concrete column for an axial load of 2500 kN. Use M20 grade concrete and Fe 415 grade steel. Effective column height is 5m.
    b) Design a square isolated footing of uniform thickness for a reinforced concrete square column of size 500mm transmitting an axial service load of 2700 kN. The safe bearing capacity of the soil at the site is 160kN/m^2. Use M20 grade concrete and Fe 415 grade steel.

7. Design the interior slab panel for a room having dimensions 4.2 m × 5.4 m. The slab is subjected to live load of 2.5 kN/m^2 and floor finish of 0.75 kN/m^2. Assume the width of supports is 300 mm. Use M 20 concrete and Fe 415 steel.

8. a) Briefly explain the method of checking for deflection in R.C. beams.
    b) A simply supported reinforced concrete beam of T-shaped cross section with a flange width of 1600mm,flange thickness of 120mm and web width of 300mm is reinforced with 8 bars of 20mm dia on the tension side at an effective depth of 600mm. Determine the short term maximum deflection if it is subjected to a total service load of 40 Kn/m, when used over an effective span of 6m.Use M20 grade concrete and Fe 415 grade steel.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
CONSTRUCTION, PLANNING AND PROJECT MANAGEMENT
[Civil Engineering]

Time: 3 hours   **Max Marks: 70**
Answer any FIVE questions
All questions carry equal marks

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

2. a) Explain the requirements of a good staircase.
   b) Explain the requirements of a good roof.

3. a) Write the requirements of an ideal material for Damp Proofing.
   b) What are the remedies for minimizing the defects in plastering work?

4. a) Explain the Recruitment process and training in an organization.
   b) Explain Minimum wages act of 1948 and the subsequent amendments.

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

6. a) What is a bar chart? Explain with the help of a suitable example, the methods of preparing bar charts.
   b) What are the short comings of bar charts? How are these removed.

7. a) Write short notes on (i) redundancies and (ii) cycles, with reference to a network.
   b) A project consists of three operations E, L and F. The network as shown in figure 1 shows the sequence.
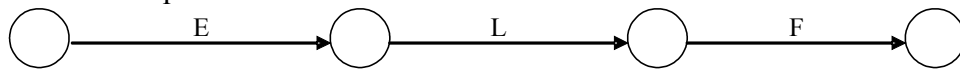
Figure 1

Each of the three operations can be completed in three sections. Draw a network, assuming that the completion of one section in an operation allow beginning of the next operation.

8. From the data given in table, prepare the network diagram, decide the completion period and complete the Critical path Schedule.

Activity Item	Duration in Days	Activities Immediately	
		Preceding	Following
A	8	None	B,C
B	10	A	C,D,E,H
C	7	A,B	D
D	4	B,C	F,H
E	2	B	G,H
F	9	D	I
G	12	E	I
H	1	B,D,E	I
I	5	F,G,H	None

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
NETWORK ANALYSIS AND SYNTHESIS
[Electrical and Electronics Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. Consider the topological graph shown in figure below. For the tree chosen with elements 5 and 6, construct the tie-set schedule.
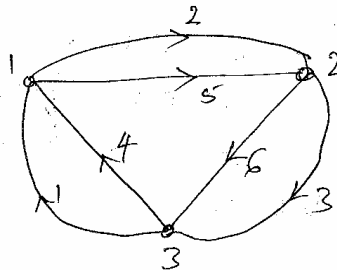
2. Find the Fourier series of the wave form shown in Figure below..
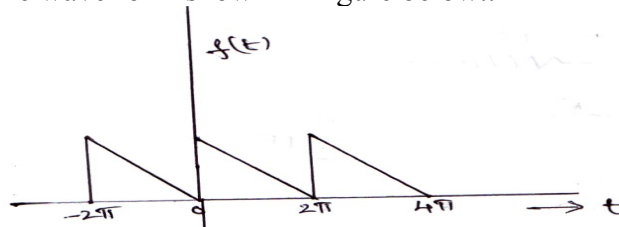
3. a) What are the advantages of Laplace Transforms?
   b) Find the Inverse Laplace transform of $I(S)=100 / (S^2+30S+200) (S+5)$.

4. a) Obtain the relation between Y and Z parameters.
   b) Obtain 'h' parameters of the network shown.
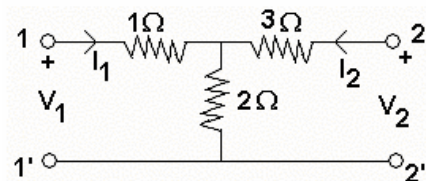
5. A Series RLC circuit with R=100Ω, L=0.1H and C=100μF has a DC voltage of 200 Volts applied to it at t=0 through a switch. Find the expression for the transient current. Assume initially relaxed circuit conditions.

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

8. Determine whether the following function is Hurwitz.
$$P(s) = s^6 + 5s^5 + 12s^4 + 16s^3 + 12s^2 + 4s$$

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
ELECTRO MAGNETIC FIELDS
[Electrical and Electronics Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove Gauss law, in integral form.
    b) Determine $\overline{D}$ at (4, 0, 3) if there is a point charge -5π MC at (4, 0,0) and a line charge 3πMC/m along *y* axis.

2. a) 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) 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 normally incident electric field has amplitude E=1.0V/m in free space just outside sea water in which ϵ_r = 80, μ_r = 1, σ = $2.5\dfrac{S}{m}$. For a frequency of 30 MHz at what depth the amplitude E be 1 mV/m.

5. a) State Ampere's law and explain in detail about one of its applications.
    b) A surface current density $\overline{K} = 30\overline{a}_x \, A/m$ K flows in *y = 0* plane throughout the region - 5 < Z < 5 m, - ∞ < x < ∞. Find $\overline{H}$ at (0, 15, 0) in free space.

6. a) Define the terms dipole moment and magnetization and establish a relation between them.
    b) Describe about the boundary conditions pertaining to the magnetic materials.

7. a) Bring out the analogy between electric and magnetic circuits.
    b) Determine the inductance of coaxial transmission line with conducting cylinders by assuming suitable data.

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

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
GENERATION OF ELECTRIC POWER
[Electrical and Electronics Engineering]

Time: 3 hours   **Max Marks: 70**
Answer any FIVE questions
All questions carry equal marks

1. a) Explain about the major electrical equipments in power stations.
    b) Define a Grid and explain its importance in power systems.

2. a) Explain how reservoir capacity is determined from mass curve.
    b) Define specific speed of a turbine and mention its significance. A turbine develops 400 HP at a speed of 1500 RPM with an available head of 80m. Calculate its specific speed.

3. Describe the schematic arrangement of a thermal power station and explain the function of each briefly.

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

5. In a 3-phase 4-wire distribution system with 240 volts between lines and neutral there is a balanced motor load of 250 kW at power factor 0.8 lamp loads connected between respective lines and neutral absorb 25 kW, 75 kW and 100kW. Calculate:
    i) the current in each line   ii) the current in neutral wire of the feeder.

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) Explain the terms load factor and diversity factor. How do these factors influence the cost of generation?
    b) Define and explain the importance of the following terms in generations:
    i) Connected Load   ii) Maximum demand   iii) Demand factor and   iv) Average load.

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

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
ELECTRICAL MEASUREMENTS
[Electrical and Electronics Engineering]

Time: 3 hours   **Max Marks: 70**
Answer any FIVE questions
All questions carry equal marks

1.   a) Explain the 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/m². 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=1.73x10⁻⁸ 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 construction and operation of single phase dynamometer wattmeter.
   b) The inductive reactance of the pressure coil circuit of a dynamometer wattmeter is
       0.35 percent of its resistance at a normal frequency and the capacitance is negligible.
       Calculate the correction factor and percentage error due to reactance for load having
       0.5 power factor lagging.

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

5.   a) Explain the procedure for calibration of ammeter using potentiometer.
   b) Explain the applications of potentiometers.

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

7.   a) Deduce the condition for balancing the bridges in a.c. bridges.
   b) Explain the working of Anderson's bridge with help of phasor diagram.

8.   a) Explain about resonance type frequency meter.
   b) Write short notes on LVDT.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
TRANSFORMERS AND INDUCTION MACHINES
[Electrical and Electronics Engineering]

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

**Answer any FIVE questions**
All questions carry equal marks

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

2. a) What are iron losses in transformers? How they are classified? Explain impact of frequency and supply voltage on iron losses
   b) A 2300/230V, 500kVA, 50Hz distribution transformer has core loss of 1600W at rated voltage and copper loss of 7.5kW at full load. During the day it is loaded as follows.

% Load	0	20	50	80	100	125
P. f.	-	0.7 lag	0.8 lag	0.9 lag	1	0.85 lag
Hours	2	4	4	5	7	2

Determine 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) What are three winding transformers? Explain them indicating the importance of each winding.
   b) What is meant by Scott connection of transformers? explain their significance, applications.

5. a) Explain the constructional details of a 3-phase squirrel cage induction motor.
   b) A 6-pole, 50Hz squirrel cage induction motor runs on no load at a shaft speed of 970 rpm. Calculate the percentage slip and the frequency of induced current in the rotor.

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. Explain the procedure of experimentally constructing the circle diagram for induction motors. Explain how the performance characteristics are obtained from the circle diagram.

8. How will you control a speed of an induction motor? Explain in detail.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
PRINCIPLES OF ELECTRICAL ENGINEERING
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

1. Find the Z - parameters of the network shown in figure below.
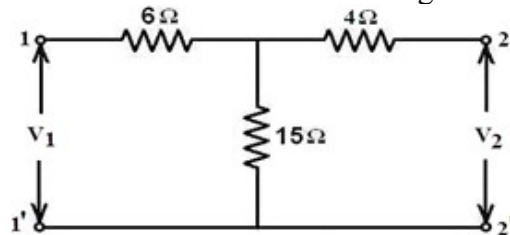
2. a) Explain the general configuration and parameters of a constant - K, T- Section and π - Section low pass filter.
    b) Design a m-derived T and π section low pass filter for nominal characteristic impedance $R_o = 600\Omega$, cut-off frequency = 1800 Hz and infinite attenuation frequency f_∞=2000 Hz.

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

4. What are the different types of dc generators? Show the connection diagrams and load characteristics of each type.

5. Derive the relationship between phase quantities and line quantities in a 3 phase balanced (i) star connected system and (ii) Delta connected system. Draw phasor diagrams showing voltages and currents.

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

7. a) Explain in detail about slip ring induction motor.
    b) Two 15- KVA, 400V, 3-phase alternators in parallel supply a total load of 25KVA at 0.8 p.f. lagging. If one alternator shares half the power at unity p.f. Determine the p.f. and KVA shared by other alternator.

8. a) Explain the principle of operation of AC Servomotors   .
    b) Explain the principle of operation of stepper motor.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
ELECTRONIC CIRCUIT ANALYSIS
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) For The CB amplifier shown below compute R_{in} and R_{out} if C_1 is
       i) connected   ii) not connected.
       The h-parameters of the transistor in CE configuration is given below:
       h_{ie} = 2.1KΩ, h_{fe} = 81, h_{oe} = 1.66 µA/V and h_{re} is negligibly small
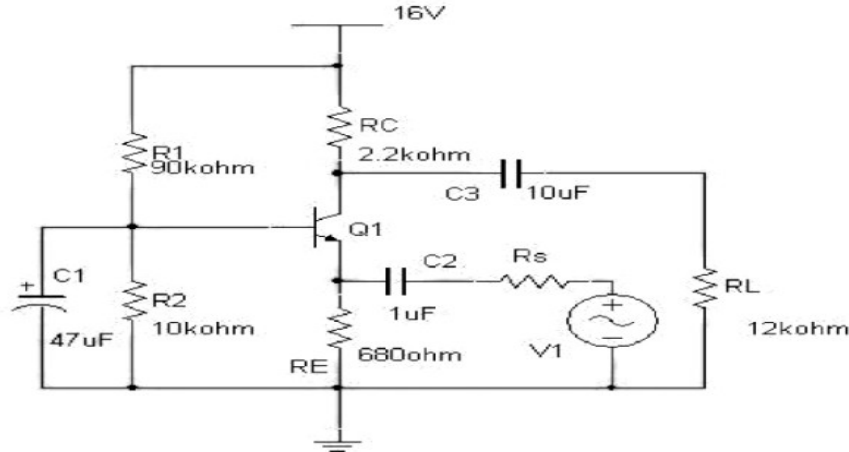
    b) Write various causes and results of phase and Frequency distortions in Transistor amplifier.

2. a) With the Help of Circuit diagram and a equivalent Circuit of a Darlington amplifier generate the expression for the overall input impedance of the pair.
    b) Explain different methods used for coupling multistage amplifiers with their Frequency response.

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 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) Why common drain is called a source follower? Explain.
    b) A FET amplifier consists of two identical stages. The total effective shunt capacitance across each stage is same and is equal to 20pF. The 3dB band width of the overall amplifier is 10MHz, if FET used in each stage has gm = 10mA/V, calculate the overall gain of the amplifier in dB in mid frequency range.

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

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) What are the advantages and disadvantages of a transformer coupled Class - A power amplifier?
    b) A class - B push pull power amplifier drives a load of 16Ω connected to the secondary of an ideal transformer. If the number of turns on the primary is 200 and that on the secondary is 50, calculate the maximum power output, dc power input, efficiency and maximum power dissipated per transistor if the supply voltage is 25Volts.

8. Draw the double tuned transformer - coupled amplifier circuit. Find the nature of responses of amplifier for different values of KQ = 1,KQ <1 and KQ >1.

CODE No.:10BT40402

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
PULSE AND DIGITAL CIRCUITS
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operation of RC high pass circuit for square wave I/P signal and obtain it's response.
    b) What is the basic circuit of an integrator? Write about attenuators and their applications.

2. a) Explain in brief about synchronized clamping.
    b) State and prove clamping circuit theorem.

3. a) Write about the diode capacitance and resistance.
    b) Explain how a transistor acts as a switch?

4. Design a Schmitt trigger in Figure 1 with UTP of 8V and LTP of 4V. Si transistors with $h_{FE} = 40$ and $I_C = 4$ mA are used. The supply voltage is 12V. The ON transistor is in saturation for which $V_{BE} = 0.7V$, $V_{CE(sat)} = 0.2V$.
    i) Calculate R_{e1} for eliminating hysteresis
    ii) Find R_{e2} to eliminate hysteresis
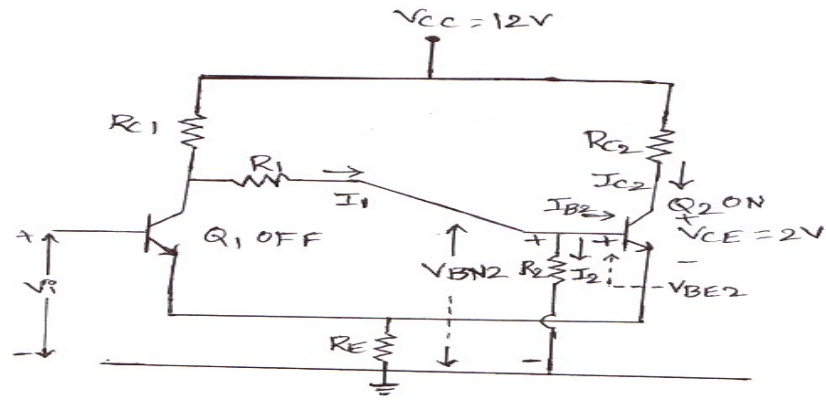
Figure 1

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) Explain the basic operating principle of sampling gates.
    b) Draw the circuits of bidirection gates using transistors and explain their operation.

7. a) Explain the frequency division in a sweep circuit
    b) Discuss in brief about a sinusoidal divider using regeneration and modulation.

8. a) Explain the realization of OR circuit using diodes and resistors.
    b) With the help of circuit diagram, explain the working of CMOS inverter.

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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 Examinations May - 2012
ELECTRO MAGNETIC WAVES AND TRANSMISSION LINES
[Electronics and Communication Engineering]

Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

1. a) Define electric potential and obtain expression for electric potential due to
       n-point charges.
    b) An infinitely long uniform line charge is located at y=3, z=5 of PL=30nc/m. Find 'E'
       at the origin.

2. a) Define convection current?
    b) The two plates of parallel plate capacitor are separated by a distance d and maintained
       at potentials 0V and V_o as shown in the figure. Assuming negligible fringing effects at
       the edges, determine
       i) The potential at any point between the plates
       ii) Surface charge density of the plates.
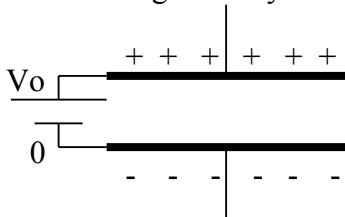
3. a) With the help of Ampere's work law find the magnetic field in a closely wound
       toroidal coil?
    b) A toroid has 1000 turns with its inner and outer radii of 10cm and 12cm respectively ,
       if a a current of 2 Amp produces a flux density of 2 Tesla in the core find the
       relative permeability of the core?

4. a) Express Maxwell's equations in dielectric medium in integral forms along with
       word statements.
    b) IIF $\sigma = 0$, $\in = 2.5$, $\in_0$ and $\mu_0 = 10\mu_0$ determine whether or not the following pairs of
       fields satisfy Maxwell's equations
       i) $\overline{E} = 2y\,\overline{a}y$, $\overline{H} = 5x\,\overline{a}x$
       ii) $\overline{E} = 100(\sin())$ $(6 \times (10)^{\uparrow} 7)t)\sin z\overline{a}y$
           $\overline{H} = -0.3128(\cos(6 \times (10)^{\uparrow} 7)\cos z\overline{a}x$.

5. a) Determine the intrinsic impedence in free space for a uniform plane wave.
    b) Determine propagation constant, phase velocity and intrinsic impedence of uniform plane
       wave in a good conductor and dielectric materials.

6. a) Show that when a plane wave is incident on perfect conductor normally, the resultant
       wave is standing wave.
    b) A perpendicularly polarized wave is incident at an angle of $\theta_1 = 15^0$. It is propagating
       from medium 1 to medium 2. Medium 1 is defined by $\in_r = 8.5$, $\mu_r = 1$, $\sigma_1 = 0$ and medium
       2 is free space. If E_2=1.0 mv/m determine E_r, H_i, H_r.

7.   a) Derive an expression for input impendence of a transmission line terminated with a load of Z_R

  b) Characteristic Impendence of a uniform transmission line is 2KΩ/m at 800Hz and propagation constant is $0.054\angle 87^0$/m find the primary constants.

8.   a) Describe the consternation of smith chart and give its applications.

  b) Explain the significance of υ_{max} and υ_{min} position along the transmission line for a complex load Z_R. Calculate the impedance at this position.

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CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
SWITCHING THEORY & LOGIC DESIGN
[Electronics and Communication Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) What is the exact number of bytes in a system that contains 1 Kbytes?
    b) Convert the given number with the indicated base to decimal $(4310)_5$.
    c) Express the given number in decimal $(16.5)_{16}$.
    d) Write about BCD code and Gray code.
    e) How many printing characters are there in ASCII?

2. a) What is duality principle in Boolean algebra?
    b) Realize XOR gate using minimum number of NAND gates.
    c) Simplify the following Boolean functions to minimum number of literals.
        i) X+X'Y   ii) (X+Y)(X'+Z)(Y+Z)
    d) Find the complement of the function: F_1 = X (Y'Z' + YZ).

3. Simplify the following Boolean expressions using K-map and implement them using NOR gates:
        a) F (A, B, C, D) = AB'C' + AC + A'CD'
        b) F (W, X, Y, Z) = W'X'Y'Z' + WXY'Z' + W'X'YZ + WXYZ.
        c) What are the advantages and disadvantages of Tabular method vis-a- vis the K-Map.

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

5. a) Distinguish the following
        i) PROM   ii) PAL   iii) PLA
    b) Implement the following Boolean function using PAL with AND-OR structure
       F1 (A,B,C,D)=∑m(2,12,13);   F2 (A,B,C,D)=∑m(7,8,9,10,11,12,13,14,15)
       F3 (A,B,C,D)=∑m(0,2,3,4,5,6,7,8,10,11,15);   F4 (A,B,C,D)=∑m(1,2,8,12,13

6. Explain and design asynchronous MOD 10 counter.

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

8. a) Explain salient features of ASM chart.
    b) Draw the state diagram and ASM chart for 2-bit up-down counter having mode control input M =0 down counting, M=1 up counting. The circuit should generate output whenever count becomes minimum or maximum.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Draw equivalent circuit using h-parameter model for the common emitter and common collector configurations subject to the restriction that $R_L = 0$. Show that the input impedances of the two circuits are equal.

    b) For the emitter follower circuit with $R_s = 500$ Ω, and $R_L = 5$ k Ω, calculate the following parameters: A_I, A_V, A_{VS}, R_i and R_0. Assume $h_{fe} = 50$, $h_{ie} = 1k\Omega$, $h_{oe} = 25\mu$ $\frac{A}{V}$.

2. a) Draw hybrid -π model for a transistor in the CE configuration and explain significance of every component in the model.

    b) Given a germanium p-n-p transistor whose bandwidth is 10^{-4}cm. at room temperature and for a d.c emitter current of 2 mA. Find emitter diffusion capacitance (diffusion constant 47 Cm^2/sec).

3. a) Derive the expressions for input and output resistances with feedback in case of shunt feedback amplifiers.

    b) Consider a CE amplifier with un-bypassed emitter resistance and draw its equivalent circuit diagram using h-parameter model without feedback but including the loading of emitter resistor. Identify the type of feedback amplifier. Find the expression for input and output resistances R_{if} and R_{0f}.

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 is a heat sink? What are various types of heat sinks? Explain the thermal analogy of the power transistors.

    b) Compare voltage amplifiers to power amplifiers.

6. a) Explain the operation of a transistor clipper discussing the role played by
    i) Cut - in region   ii) input resistance.
    Make analysis of input and output wave forms.

    b) What is the significance of restoring the lost dc component? Making use of any basic clamping circuit, explain the dc restoration to a sinusoidal signal. Sketch the input and output wave forms.

7. a) Explain how a transistor can be used as an electronic switch.

    b) Design a high speed Si transistor switch (connected in CE configuration) for the given specifications: $V_{CC} = 12$ V, $-V_{BB} = -10$V, $I_C = 8$ mA, $h_{FE(min)} = 30$, and $R_2 = 3R_1$. The resistor R_1 is connected between the base of the transistor and the input, and R_2 is connected between base of the transistor and V_{BB}. Assume suitable saturation, cut off voltages for the given transistor.

8. a) Describe how gate width of an emitter coupled monostable multi vibrator can be linearly varied by adjusting the bias voltage V through a dc potentiometer.

    b) Explain the operation of a Bistable multi vibrator with the help of a neat circuit diagram and wave forms.

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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 Examinations May - 2012
COMPUTER ARCHITECTURE AND ORGANIZATION
[Computer Science and Engineering, Information Technology, Electronics and Control Engineering, Computer Science and Systems Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) What is the performance equation? Explain the Factors.
    b) Explain the hardware algorithm to perform multiplication of two binary numbers with help of a flow chart.

2. a) Write about instruction cycle in detail?
    b) Explain various types of instruction formats?

3. a) Define the following:
        i)   Micro-operation
        ii) Microinstruction
        iii) Micro program
        iv) Micro code
        v)   Control Memory
    b) How do you map a computer instruction to a microinstruction address? Explain.

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

5. a) What is meant by the Locality of Reference? List the mapping schemes of Cache. Explain any one of them.
    b) Explain DMA controller with a neat sketch.

6. a) Briefly explain the PCI.
    b) Describe the Serial communication Protocol RS 232.

7. Write short notes on the following:
        i)   Mutual Exclusion
        ii) Critical Section
        iii) Hardware Lock
        iv) Semaphore
        v)   Test-and-Set Instruction

8. Write about Power PC architecture in detail?

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CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
OBJECT ORIENTED PROGRAMMING
[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

1. a) What are the benefits of OOPs when compared to procedure oriented programming?
   b) Explain the following:
      i) Inline functions   ii) static member functions
      iii) Friend functions   iv) const member functions

2. a) Differentiate between method overloading and method overriding.
   b) Explain about runtime polymorphism with example.

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) Compare and contrast between class and an interface.
   b) Write a program to implement a class Teacher contains two fields Name and qualification.
      Extend the class to Department, it contains Dept. No and Dept. Name. An Interface
      named as College it contains one field Name of the College. Using the above classes
      and Interface get the appropriate information and display it.

5. a) How to create user defined exceptions in JAVA with example.
   b) Write a program to create and access packages in JAVA.

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

7. a) Describe about various layout managers.
   b) Write a program to implement calculator.

8. a) Discuss about JApplet, JFrame and JComponent.
   b) Write a Java Program to display the following 3 by 3 Magic Square (Total = 15) using JTable.

2	9	4
7	5	3
6	1	8

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
PRINCIPLES OF PROGRAMMING LANGUAGES
[Computer Science and Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) What are the objectives of programming languages?
    b) Discuss the principles of imperative and functional programming paradigms.
    c) Define context free grammars.

2. Define Union. What is the difference between record and union? Explain how union is supported by different programming languages.

3. a) Explain with an example multiple selections using "elseif" in Ada.
    b) What mixed-mode assignments are allowed in C and Java?

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) Define constructor and destructor?
    b) What is one reason Java does not have friend function or friend classes?
    c) Define Abstract Data Type?

6. a) Discuss the different data structures in Prolog.
    b) Explain the concept of unification in Prolog with an example.

7. a) What are the features of functional programming languages? Explain.
    b) Explain the concept of delayed evaluation in Lisp.

8. a) What arguments do you frequently use for the Perl interpreter and what do they mean?
    b) Explain the difference between my and local?
    c) Explain the difference between uses and require?
    d) What are the differences between for and foreach, exec and system?

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CODE No.:10BT41001

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
ELECTRICAL & ELECTRONIC MEASUREMENTS
[Electronics and Instrumentation Engineering]

Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

1. a) Describe the construction and working of a Repulsion type Moving Iron instrument
       with a neat diagram. Derive the equation for deflection if the instrument is spring controlled.
    b) The inductance of a moving iron ammeter is $(0.01+C\theta)^2$ mH, where θ is the deflection
       in degree from the zero position. The angular deflections of the instrument
       corresponding to 1.5 A and 2 A are respectively 90° and 120°. Find the value of C.

2. a) A 50Ω basic movement requiring a full scale current of 1mA is to be used as a
       Series type ohmmeter. The internal battery voltage is 3V. A half scale deflection
       marking for desired out is 1000Ω. Find (i) The values of R_1 and R_2; (ii) Maximum
       value of R_2 to compensate for a 5% drop in battery voltage.
    b) Discuss how the unknown E.M.F is measured using potentiometer.

3. a) Explain the construction and principle of single phase Electrodynamowattmeter.
    b) Briefly discuss about the testing and calibrating procedures employed for energy meters.

4. a) Describe the working of Hay's Bridge. Draw the phasor diagram under conditions
       of balance. Why is this bridge suited for measurement of inductance of high Q coils?
    b) A capacitor bushing forms arm *ab* of a Schering bridge and a standard capacitor of 500pF
       forms arm *ad*. Arm *bc* consists of a non-inductive resistance of 300Ω. When the bridge
       is balanced, arm *cd* has a resistance of 72.6Ω in parallel with a capacitance of 0.148μF.
       The supply frequency is 50Hz. Calculate the capacitance & dielectric loss angle of
       capacitor. Derive the equations for balance.

5. a) What is the difference between true RMS volt meter and various digital voltmeters?
    b) Write a short note on ramp type Digital Volt Meter (DVM).

6. a) Explain Frequency Synthesizer with a neat diagram.
    b) Explain the basic principle and working of Frequency Counter with a neat diagram.

7. a) With a neat sketch, explain about the Cathode Ray Oscilloscopes.
    b) Briefly discuss about the Lissajous patterns. With an example, explain how the
       frequency ratio is measured by the above method.

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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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
TRANSDUCERS IN INSTRUMENTATION
[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours   **Max Marks: 70**
Answer any FIVE questions
All questions carry equal marks

1.   a) Explain the systematic errors with an example.
        b) Define the Units. Explain the different types of Units.

2.   a) Explain First-order measurement system with step input.
        b) Define the following:
           i) Hysteresis
           ii) Span
           iii) Threshold
           iv) Calibration

3.   a) Explain the working principle of RTD.
        b) A P20 NTC thermistor (Thermometrics) has 10 kΩ, $\delta = 0.14$ mW/K in still air
           at 25^0C, and $R_{25} / R_{125} = 19.8$. Calculate the maximal drop in voltage across it
           when immersed in air at 35^0C.

4.   a) What is LVDT? Explain its construction, principle and applications.
        b) Explain about Electromagnetic transducer with an example.

5.   a) Explain the frequency response of capacitive transducers.
        b) Explain the variable and differential dielectric capacitive transducer.

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

7.   a) Explain charge amplifier and derive its output equation and frequency response.
        b) With a neat block diagram explain in detail about signal conditioning.

8.   a) Write short notes on Magneto diodes and Magneto transistors.
        b) Explain the fiber-optic transducers.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

DATA COMMUNICATIONS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

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

2. a) List and describe the types of losses associated with metallic transmission lines.
   b) Describe the equivalent circuit for a metallic transmission line?
   c) Describe the block diagram of optical fiber communication system.

3. a) Explain the difference between linear and non linear PCM codes.
   b) Define the following terms and describe how they affect line encoding: duty cycle, bandwidth, clock recovery and error detection.

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) Briefly describe dual - tone multifrequency and mulifrequency signaling.
   b) Define line conditioning and describe C- and D- type conditioning.

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

7. a) Write short notes on hamming code.
   b) Sixteen bit messages are transmitted using hamming code. How many check bits are needed to ensure that the receiver can detect and correct single bit errors? Show the bit pattern transmitted for the message 1010110011001011.

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

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
COMPUTER GRAPHICS AND MULTI-MEDIA SYSTEMS
[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe Raster Scan displays
   b) Describe any two hard copy devices.

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

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

4. Explain the Sutherland Cohen line-clipping algorithm? And Apply the same algorithm to clip a line with end points (1,7) and (7,5) against a window with boundaries $xw_{min}=2, xw_{max}=6, yw_{min}=2, yw_{max}=6$.

5. a) Write an algorithm to display two dimensional cubic Bezier curve, given a set of four control points in the *xy* plane.
   b) Write an algorithm for converting cylinder to a polygon mesh representation.

6. a) Explain database management systems for multimedia systems.
   b) Explain multimedia data interface standards.

7. a) Describe the capabilities and limitations of bitmap images and vector images.
   b) Define MIDI . List its attributes . Compare and contrast the use of MIDI and digitized audio in a multimedia production.

8. a) Explain about the steps involved in creating hypermedia messages.
   b) Explain the Integrated document measurement.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

CONTROL SYSTEMS

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

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Compare open loop and closed loop control systems.
    b) Explain the concept of feedback and also explain how it will improve the performance of the system.

2. a) Explain the working of a synchro-transmitter-receiver set.
    b) Obtain the transfer function for the following electrical network.
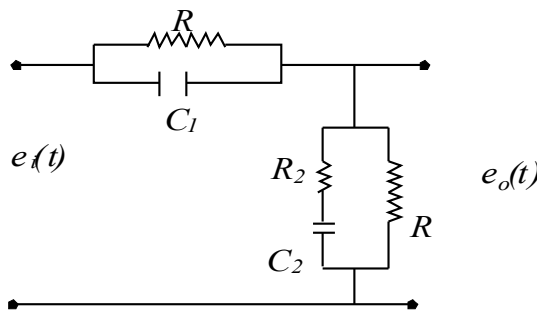
3. a) Explain the salient points of a typical step response of a 2nd order system.

    b) The forward path transfer function of a unity feed back system in $G(s) = \dfrac{2}{s(s+3)}$.

    Obtain the expression for unit step response of the system.

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

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

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

5.
    Develop Bode plot and state the stability of the system given as $G(s) = \dfrac{80}{s(s+2)(s+20)}$.

6. a) What is the significance of Nyquist plots.

    b) Sketch polar plot for the open loop system given as $\dfrac{s+4}{(s+1)(s-1)}$.

7. a) Narrate the conditions when a system requires compensation.
    b) Explain how a lead-log compensation can be obtained using Bode plots.

8. a) Define the terms state model and state equations.
    b) Explain Kalman's test to assess the controllability and observability properties of a system.

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CODE No.:10BT42301

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
MASS TRANSFER AND SEPARATION
[Bio-Technology]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss Stefan's experiment for "diffusitivity" estimation.
    b) Predict the diffusivity of bovine serum albumin at 298k in water as a dilute solution
       using modified Polson equation. The molecular weight of bovine serum albumin is
       67500 kg/kgmol. The viscosity of water at 25^0c is 0.897 x 10-3 p_as_a.

2. a) Distinguish between Eddy and Molecular Diffusion?
    b) Explain Penetration Theory versus Two Film Theory?

3. a) Discuss steam distillation. Give its applications.
    b) Discuss design of distillation column for separation of an ordinary binary mixture using
       Mc Cabe-Thiele method.

4. a) Discuss different types of equilibrium system for liquid- liquid extraction.
    b) Water containing nicotine (1% solution) is extracted with kerosene water and kerosene
       are essentially insoluble determine the percentage of extraction of nicotine, if 100kg of
       feed solution is extracted in single stage with 150 kg of kerosene. The equilibrium
       equation Y= 0.91 X applies where Y = kg nicotine/Kg kerosene and X=Kg nicotine/Kg water.

5. What is leaching ? Explain its applications in biological processing.

6. a) Why are triangular diagrams useful for liquid-liquid equilibrium calculations with a
       ternary system? On such a diagram, what are the miscibility boundary, plait point,
       and tie lines?
    b) Explain briefly solutropic system.
    c) Write the procedure for estimation of number of stages if liquid-liquid extraction is
       carried out in cross current operation.

7. a) What is an adsorption isotherm? How can the heat of adsorption be determined from
       a series of isotherms?
    b) What is ideal fixed-bed adsorption? What assumptions are necessary for it to apply?
       What is meant by breakthrough?

8. Describe a MSMPR crystallizer.

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CODE No.:10BT42302

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
ANALYTICAL TECHNIQUES IN BIOTECHNOLOGY
[Bio-Technology]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. Discuss on scintillation cocktail and background noise. Write note on quenching.

2. What are mechanism of image formation and discuss on localization of DNA molecule by using electron microscope.

3. Discuss on parameters measured in Absorption Spectroscopy and write note on factors affecting absorption properties of chromophore.

4. Write note on theory of velocity sedimentation and discuss on sedimentation co-efficient.

5. Write in detail about UV-Visible spectrophotometer and explain the principle of mass spectroscopy & atomic absorption spectroscopy?

6. What are detectors and explain in detail about different types of detectors used in chromatography.

7. Discuss on interpretation of data obtained from NMR - spectra and write note on chemical shift.

8. Explain types of analytical methods and write the importance of precision, accuracy, sensitivity and detection limits for instruments?

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CODE No.:10BT42303

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
MOLECULAR BIOLOGY AND GENETICS
[Bio-Technology]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. Write about DNA damage and add note different types of repair mechanisms shown by living organisms to rectify the damage?

2. Explain the post transcriptional processing of RNA's?

3. What is the difference in transcriptional processing of mRNA in prokaryotes and Eukaryotes?

4. What is meant by post translational modification? Explain with an example.

5. Describe in detail about the Mendelian laws of inheritance?

6. Write short notes on:
    a) Write a note on the chemical composition of chromatin.
    b) Describe structural organization of Nucleosome.

7. Explain various types of chromosomal disorders.

8. What is gene mapping? Explain the phenomenon using two point and three point test cross.

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CODE No.:10BT42304

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
BIOCHEMICAL THERMODYNAMICS
[Bio-Technology]

Time: 3 hours   Max Marks: 70
Answer any FIVE questions
All questions carry equal marks

1. a) State first law of thermodynamics for closed systems.
    b) A closed system, going from state A to state B, does 40 kJ of work and suffers a drop of 25 kJ in its internal energy. What is the heat effect? If the system is returned adiabatically from state B to state A, what is the work effect?

2. a) A kilogram of water at 273K is brought into contact with a hot reservoir at 373 K. When the liquid water has reached 373K, what is the entropy change of the water and that of the reservoir? What is ΔS total?
    b) Derive the expression for change of entropy for an ideal gas.

3. Discuss qualitative procedure to estimate the parameters of equation of state.

4. Discuss P-T and P-V diagrams for pure substances.

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°C 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. a) Prepare a t - x - y diagram for the ideal binary system benzene (i) - ethyl benzene (ii) at 101.3 Kpa. Vapour pressure of the pure species are given by
    $\ln P_1^{Sat} = 13.8858 - 2788.51/t+220.79$
    $\ln P_2^{Sat} = 14.0045 - 3279.47/t+213.20$
    b) Explain briefly about solid - liquid equilibrium diagram.

7. a) What is a reaction coordinate and What is its significance?
    b) A system initially contains 3 mol of H_2S and 4 mol of O_2 and undergoes the reaction:
    $2H_2S + 3 O_2 \rightarrow 2 H_2O + 2 SO_2$.
    Develop expressions for the mole fractions of the reacting species in terms of the reaction coordinate.

8. Explain the role played by adenosine phosphates and adenosine dinucleotides in cell metabolism.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

BIOPROCESS ENGINEERING

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain in detail, the development of Bioprocess Engineering as a discipline and its role in the today's industrial development.

2. Write short notes on:
   a) Generalized mass balance equation.
   b) Biomass yield.

3. Steam is used to heat nutrient medium in a continuous flow process. Saturated steam at $150\,^0C$ enters a coil on the outside of the heating vessel and is completely condensed. Medium enters the vessel at $15\,^0C$ and leaves at $44\,^0C$. Heat losses from the jacket to the surroundings are estimated as 0.22kW. If the flow rate of medium is 3250 kg/h and the heat capacity is $Cp = 0.9$ cal/g^0C, how much steam is required?

4. Give a detailed account of whole cell immobilization.

5. Give a detailed account of the medium requirements for fermentation processes.

6. Aerobic degradation of benzoic acid by a mixed culture of microorganisms can be represented by the following reaction

   $$C_6H_5COOH + aO_2 + bNH_3 \rightarrow cC_5H_7NO_2 + dH_2O + eCO_2$$

   a) Determine a, b, c, d and e if RQ = 0.9.
   b) Determine the yield coefficients, $Y_{X/S}$ and $Y_{X/O2}$.
   c) Determine degree of reduction for the substrate and bacteria.

7. Discuss in detail energetic analysis of microbial growth and product formation.

8. Give a brief account of
   a) Substrate and product inhibition on cell growth and product formation
   b) Structured models for growth and product formation.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
DESIGN AND ANALYSIS OF ALGORITHMS
[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Write down the DFS algorithm? Draw a Binary tree of depth 4; label the nodes with any suitable notations. Trace the nodes using DFS write down the sequences of nodes?

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

3. a) Write the recursive binary search algorithm. Also find its time complexity.
b) Write and analyze the algorithm to find maxima and minima.

4. a) Write Greedy algorithm to the Job sequencing with deadline.
b) Explain how we can achieve Optimal storage on Tapes using greedy method.

5. a) Explain matrix chain multiplication with an example.
b) Solve the following 0/1 Knapsack problem using dynamic programming
P = (11,21,31,33), W=(2,11,22,15), C=40, n=4.

6. Explain in detail about Hamiltonian cycles.

7. a) Write an algorithm to solve the Knapsack problem with the Branch and Bound.
b) Differentiate between Dynamic Knapsack and Branch and Bound Knapsack problem.

8. a) Explain the classes of NP-hard and NP-complete.
b) Write a nondeterministic Knapsack algorithm.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
MICRO-PROCESSOR AND INTERFACING
[Computer Science and Systems Engineering]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Describe in detail about the register organization of 8086 microprocessor.
    b) Develop a macro called ADD32 that adds the 32-bit contents of DX-CX to the 32-bit contents of BX-AX.

2. a) Write an 8086 ALP to add a series of 8-bit numbers.
    b) Write an 8086 ALP to find out the largest number from an array of 8-bit 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) Distinguish between Mode set control word and BSR control Word of 8255?
    b) Explain how a keyboard is interfaced to 8086 through 8255. Draw the necessary interface circuit?

5. a) Give the block diagram of 8259 priority intercept controller and explain it with the control and status words.
    b) Explain in detail about the interrupt structure of 8086 microprocessor.

6. a) Explain the operation of 8251 (USART). What are its various modes of operation?
    b) Explain high-speed serial communication standards.

7. a) 80286 when operated in the protected mode supports multi tasking. Explain this statement indicating how this is accomplished.
    b) Describe the salient features of Pentium processor?

8. a) Explain the serial port operation of 8051 microcontroller.
    b) Explain the interrupt structure of 8051 microcontroller.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
OPERATING SYSTEMS
[Information Technology]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. What is a system call? Write and explain different types of system calls with examples?

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) Compare Binary Semaphore and Counting semaphore?
    b) Explain TestAndSet, and Swap methods?

4. a) What is a deadlock? Explain necessary conditions for a deadlock to occur.
    b) Write about Banker's algorithm for deadlock avoidance.

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) Explain different disk space allocation methods.
    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 goals of protection?
    b) What are program threats and authentication?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
II B.Tech II Semester (SVEC10) Regular Examinations May - 2012
THEORY OF COMPUTATION
[Information Technology]

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove Kleene's theorem.
   b) Define NFA, DFA formally; convert the following NFA into DFA.

	0	1
→ q_0	q_1	$\{q_0,q_1\}$
$q1$	$\{q_0,q_1\}$	q_1
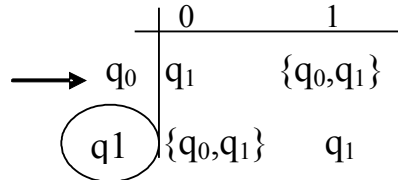
2. a) Convert the following NFA with-ε into NFA without-ε.
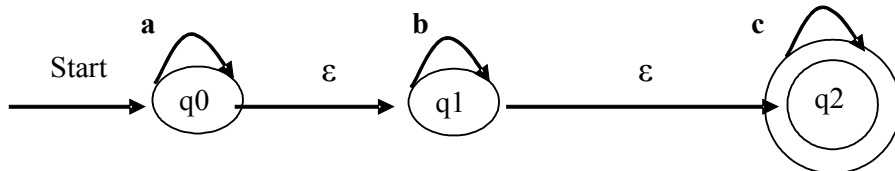
   b) Draw FA recognizing the corresponding language for the following expression.
   i) $1(11+10)^*+0(10+01)^*$
   ii) $(001+101)^*(11)^*$

3. Construct an FA equivalent to the Regular Expression $(0+1)*(00+11)(0+1)*$.

4. 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.

5. a) Write short notes on application of pumping lemma for CFL.
   b) Describe a short notes about the push down automata and it's representation.

6. a) What are the methods accepted by PDA? Explain with examples
   b) Construct a PDA to accept $a^x b^y w a^x b^y$.

7. a) Draw a transition diagram for a TM accepting the following languages.
   i) The languages of all non-palindrome over {a,b}
   ii) $\{www/W \in \{a,b\}^*\}$
   b) Design a TM for $L=\{0^n 1^n 2^n /n>=1\}$.

8. Explain the following terms in brief:
   a) Computable function
   b) P and NP problem
   c) UTM.

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CODE No.:10MC1HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. I Semester (SVEC10) Regular/Supplementary Examinations January - 2012
ACCOUNTING AND FINANCIAL MANAGEMENT
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. Define Accounting. Briefly explain the concepts and conventions of Accounting System.

2. Journalize and ledger posts the following transactions in suitable books.
    (a) Paid Rs.150 in cost as wages for installation of machine.
    (b) Sold goods to Kitty. List price Rs.12, 000. Sales subject to 10% Trade Discount and 5% cash Discount if payment is made immediately. Kitty availed of cash discount.
    (c) Supplied goods costing Rs.10, 000 to M/S Shankuntala. Issued invoice at 10% above cost less 5% trade discount.
    (d) Goods worth Rs.5, 000 distributed as sample.
    (e) Goods costing Rs.66, 000 stolen in transit.
    (f) Cash embezzled by M/S Himanshu Rs.2,00,000

3. Discuss briefly the different techniques of 'Analysis and Interpretation' of Financial Statements.

4. You are presented with the following figures. Prepared from the audited balance sheet of Fair Dealings Ltd.,

PARTICULARS	YEAR 1 (Rs.)
ASSETS	
Debtors	30,000
Stock	50,000
Plant and Equipment	12,000
Buildings	10,000
TOTAL	**1,02,000**
LIABILITIES	
Bank	11,000
Trade Creditors	25,000
Profit & Loss A/C	10,000
Paid up Capital (Rs.10 per shares, Rs.7.50 paid)	56,000
TOTAL	**1,02,000**
Sales	1,00,000
Gross Profit	25,000
Net Profit	5,000
Dividend Paid	4,000

The opening stock at the beginning of year 1 was Rs.4, 000. You are required to calculate all the relevant ratios viz., Profitability Ratios, Liquidity Ratios etc., and comment on financial position of the company.

5. Discuss the Scope, Role and Objectives of Financial Management.

6. What is CVP analysis? Discuss its Managerial uses and limitations.

7. What is meant by Break Even Point (BEP) ? Explain the practical applications of BEP in a textile show room.

8. A company is considering two mutually exclusive projects. Both projects require an initial cash outlay of Rs.10,000 each and have a life of 5 years. The company's required rate of return is 10 % and pays tax at 50 %. The project will be depreciated on a straight line basis. The before tax cash flows expected to be generated by the project are as follows:

Before Tax Cash Flows					
Year	1	2	3	4	5
Project A	10,000	10,000	10,000	10,000	10,000
Project B	5,000	5,000	3,000	5,000	5,000

Calculate for each project (1) Pay Back Period (2) Accounting Rate of Return (ARR)

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CODE No.:10MC1HS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. I Semester (SVEC10) Regular/Supplementary Examinations January - 2012
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 differences between verbal and non-verbal communication?

2. i) Write the antonyms for the following words
       a) Abundant   b) sorrowful
   ii) Write the synonyms for the following words.
       a) witness   b) luminous
   iii) Give one word substitutes for the following.
       a) A group of sheep.
       b) Shot dead.
   iv) Use the following idioms and phrases in sentences to make the meanings clear.
       a) To turn a blind eye to
       b) Shot in the arm.
   v) Rewrite the sentences using the correct homophones from the given options:
       a) The _____ (son/sun) is the centre of the universe.
       b) The _____ (peas/piece) toast tastes good.
   vi) Write a sentence using the correct homographs.
       a) bay   b) bay

3. Define Reading skill explaining the different types.

4. Mention the differences between spoken and written communication.

5. Write an essay on the importance of reading skills in the development of vocabulary.

6. The table given below gives various categories and their correlation to the whole as a percentage
   Table: Relative Customer Value of Facilities and Ambience

Facilities	Percentages
Lawn and Park	35%
Decor	12%
Refreshment Stalls	18%
Drinking Water	15%
Air Conditioning	9%
Music	4%
Others	7%

   Analyse the data and write a report on the weightage of the different facilities.

7. (a) What is a report? What are the different types of reports?
   (b) Write short notes on
       (i) Thesis writing   (ii) Fax

8. (a) Discuss the characteristics of job interview.
   (b) Video conferencing.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. I Semester (SVEC10) Regular/Supplementary Examinations January - 2012
DISCRETE MATHEMATICAL STRUCTURES
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. (a) Show that
   $$\neg (P \wedge Q) \rightarrow (\neg P \vee (\neg P \vee Q)) \Leftrightarrow (\neg P \vee Q)$$
   (b) Obtain the Principal disjunctive normal form of
   (i) $\neg P \vee Q$ (ii)$(P \wedge Q) \vee (\neg P \wedge R) \vee (Q \wedge R)$

2. (a) Show that RVS follows logically from the premises CVD,
   $(C \vee D) \rightarrow \neg H, \neg H \rightarrow (A \wedge \neg B)$ and $(A \wedge \neg B) \rightarrow (R \vee S)$
   (b) Show that $(x)(p(x) \vee Q(x)) \Rightarrow (x)(p(x) \vee (\exists x) Q(x)$

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) How many committees of 5 or more can be choosen from 9 people.
   (b) Write the generating function for a_r (where a_r is the number of ways the sum r can be
      obtained) when two distinguishable dice are tossed.
   (c) In how many ways can the letters {5.a, 4.b, 3.c} be arranged so that all the letters of the same
      kind are not in a single block?

6. a) Solve the recurrence relation $a_n - 6 a_{n-1} + 9 a_{n-2} = 0$ for $n \geq 2$, given that $a_0 = 5$, $a_1 = 12$.
   b) Find the explicit form of a_n, given $a_{n+2} - 5 a_{n+1} + 6 a_n = 0$, $a_1 = 1$, $a_2 = -7$.

7. (a) If G is a complete simple graph on n-vertices (n ≥ 3) then show that G has a Hamiltonian
      cycle.
   (b) State and prove Euler's formula for planar graphs.

8. a) Explain the procedure of Breadth First Search.
   b) Explain Kruskal's algorithm.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. I Semester (SVEC10) Regular/Supplementary Examinations January - 2012
PROGRAMMING THROUGH C
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What are different data types that are supported by ANSI C and write about escape sequence in C ?
   b) What are different software tools for programming apart from Algorithm and flowchart?

2. a) Write about the syntax of *switch-case* construct of C language.
   b) Write a C program for finding the value of cos(x) series for a given value of x up to an accuracy of 4-digits.

3. a) What is an array? Explain the declaration and various ways to initialize a one dimensional array with examples.
   b) Briefly explain about String manipulation functions.

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) What are the different parameter passing methods? Explain with suitable examples.
   b) Write a program finding the factorial of a given *n* value.

6. a) 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) Write a program in 'C' to copy contents of one file to another file.
   b) Using the command line argument, develop a C-Function to simulate **'move'** command.

8. a) Write a program to display a line of yellow text with red background color.
   b) Write a program to draw a filled rectangle using *line()* function only, in graphics mode.

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CODE No.:10MC10103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Regular/Supplementary Examinations January - 2012

DATA STRUCTURES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. (a) Explain the best, worst and average case analyses of an algorithm.
   (b) Explain about the additional factors that may influence the space complexity of a program.

2. (a) Write an algorithm to convert an infix expression into postfix expression using stack.
   (b) Write an algorithm to implement stack ADT using arrays.

3. a) Write four procedures to insert elements into and delete elements from both end of a
      dequeue constructed from an array.
   b) Give some applications of circular and priority queue.

4. Consider two single linked list called A and B , where each node having item field which is
   numeric and an address field. Write procedures to do the following things:
   Find the union,intersection and set difference of A and B and display it separately.

5. (a) Write an algorithm to sort the elements whose worst and average cases are O(n log n)
   (b) Consider the list of elements: -15, -6, 0, 7, 9, 23, 54, 82, 101, 112, 125, 131,142, 151.
         Trace the Binary search algorithm ser4aching for elements 151, -14, 9 respectively.

6. a) What is a binary search tree? Explain an algorithm to perform search on it. Write its time
      complexities.
   b) What are threaded binary trees? Explain the advantages of threaded binary trees over binary
      search trees with the help of an example.

7. What is a heap? Explain the implementation of a heap using an array. How are insertion and
   deletion operations performed on a heap?

8. a) What is a graph? Explain two most common structures used to represent a graph.
   b) What are minimum spanning trees? Explain the algorithm to construct a minimum spanning
      tree for a given graph.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. I Semester (SVEC10) Supplementary Examinations July - 2012
ACCOUNTING AND FINANCIAL MANAGEMENT
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   Max Marks: 60
Answer any FIVE questions
All questions carry equal marks

1. What are the managerial uses of Computerized Accounting System?

2. From the following balances of Balaji paints prepare Trading Account, Profit and Loss Account for the year ending 31st December 2010 and Balance sheet as on the date.

	Rs		Rs
Purchases	1,40,000	Commission Received	10,000
Sales	2,88,000	Debtors	50,000
Opening Stock	30,000	Salaries	48,000
Machinery	80,000	Insurance	12,000
Cash	20,000	Buildings	1,50,000
Creditors	5,000	Bills Payable	20,000
Wages	30,000	Furniture	5,000
Printing & Stationary	7,000	Interest received	8,000
Capital	2,50,000	Patents	40,000
Factory Rent	3,000	Bank overdraft	34,000

   Adjustments:
   a. Closing stock Rs 55,000
   b. Outstanding printing charges Rs. 3,000
   c. Insurance paid in advance Rs. 2,000
   d. Unpaid wages Rs. 5,000
   e. Commission Received in advance Rs. 1,000
   f. Interest accrued but not received Rs. 2,000.

3. From the following information, calculate i) Current Assets, ii) Current Liabilities; iii) Liquid Assets and iv) Stock
   Current Ratio - 2.6
   Liquid Ratio - 1.4
   Working Capital - Rs. 1,10,000

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 cost of capital? What is meant by "explicit cost" and "real cost" of capital?.

8. What is meant by Capital Budgeting? Explain the various methods of Capital Budgeting.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. I Semester (SVEC10) Supplementary Examinations July - 2012
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. (a) Explain the following idioms and phrases.
     (i)   Bed of Roses.
     (ii) Once in a blue Moon.
     (iii) Born with silver spoon.
     (iv) Wet behind the ears.
     (v)   On cloud nine.
     (vi) To rain cats and dogs.
   (b) Write one word substitute to the following.
     (i)   Study and collection of coins.
     (ii) Study of diseases of children.
     (iii) Killing of one's own father.
     (iv) The place where birds are kept.
     (v)   A person who can speak many languages.
     (vi) Fear of heights.

2. i)   Write the antonyms for the following words.
        a) native   b) curious
   ii) Write the synonyms for the following words.
        a) butcher   b) eruption
   iii) Give one-word substitute for the following.
        a) killing one's mother
        b) killing one's father
   iv) Use the following idioms and phrases in sentences to make the meanings clear.
        a) to run into bad weather
        b) sour grapes
   v)   Rewrite the sentences using the correct homophones from the given options:
        a) Give me a _____ (piece/peace) of biscuit.
        b) My _____ (son/sun) is the apple of my eye.
   vi) Write a sentence using the correct homographs.
        a) bank   b) bank

3. What is technical presentation? Discuss the importance of presentation skills.

4. Mention the differences between spoken and written communication.

5. Write short notes on
     (a) Skimming
     (b) Scanning

6. The chart reveals the literacy rates in India and China in 1990-91. Study the chart and analyse it.
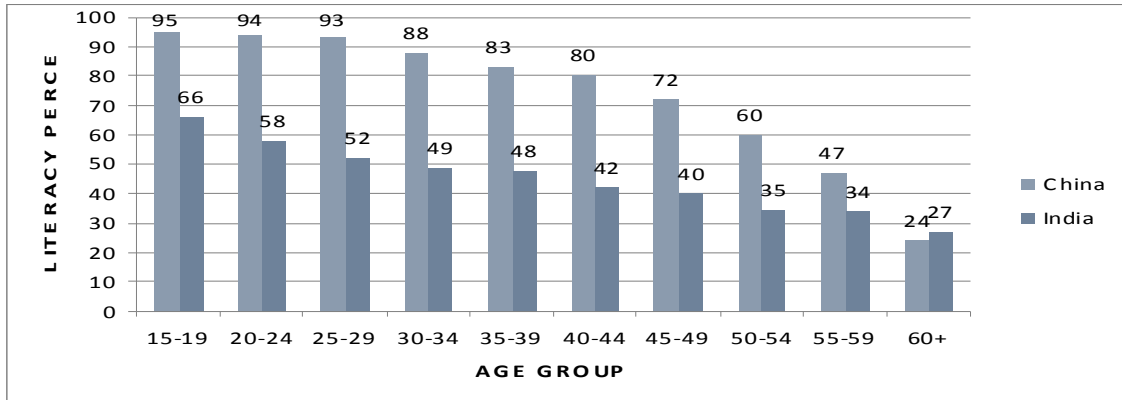
7. (a) Discuss the format and style of language used in a good business letter giving illustrations.

    (b) Write short notes on:
        i) E-mail
        ii) Fax

8. (a) Discuss the steps involved in making notes on Business Conversations.

    (b) Discuss the characteristics of Job Interview.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.C.A. I Semester (SVEC10) Supplementary Examinations July - 2012
DISCRETE MATHEMATICAL STRUCTURES
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. (a) Show that
$(P \lor Q) \land \neg (\neg (P \land (\neg Q \lor \neg R) \lor (\neg P \land \neg R) \lor (\neg P \land \neg R)$ is a tautology.
    (b) Obtain the Principal Conjunctive normal form of
$(P \land Q) \lor \neg (P \land R)$

2. a) Show that $P \lor Q$ is tautologically implied by $(S \lor R) \land (R \rightarrow P) \land (S \rightarrow Q)$.
    b) Show that from
i) $(\exists x) (F(x) \land S(x)) \rightarrow (y) (M(y) \rightarrow W(y))$
ii) $(\exists y) (M(y) \land \neg W(y))$
    the conclusion $(x) (F(x) \rightarrow \neg S(x))$ follows.

3. a) Draw the Hasse diagram for the following set under the partial ordering relations "divides" and indicate whether totally ordered or not.
$\{3,9,27,54\}$
    b) Establish the following distributive inequalities.
i) $a \oplus (b * c) \le (a \oplus b) * (a \oplus c)$ and
ii) $a * (b \oplus c) \ge (a * b) \oplus (a * c)$
    For any a, b and c belonging to a lattice $< L, \le >$.

4.
    (a) Let S = {a, b, c} and let * denote a binary operation on S given by

*	a	b	c
a	a	b	c
b	b	b	c
c	c	b	c

and

    also

    let P = {1, 2, 3} and $\oplus$ be a binary operation on P given by

$\oplus$	1	2	3
1	1	2	1
2	1	2	2
3	1	2	3

    Then show that $(S , *)$ and $(P, \oplus)$ are isomorphic.
    (b) If $(G, *)$ is an abelian group, then for all $a, b \in G$ show that $(a * b)^n = a^n * b^n$.

5. (a) Use mathematical induction to prove that n^3-n is divisible by 3 whenever 'n' is positive.
    (b) State and prove the pigeonhole and the generalized pigeonhole principle.

6. (a) Let P_n be the number of permutations of m letters taken n at a time with repetitions, but no 3 consecutive letters being the same. Derive a recurrence relation connecting P_n, P_{n-1} and P_{n-2}.

(b) Find the complete solution to $a_n + 2a_{n-1} = n + 3$ for $n \geq 1$ and with $a_0 = 3$.

7. (a) Prove that an undirected graph has an even number of vertices of odd degree

(b) Write Dijkstra's algorithm and trace the algorithm with an example.

8. Explain Kruskal algorithm and using the same obtain the minimal spanning tree for the following weighted graph.
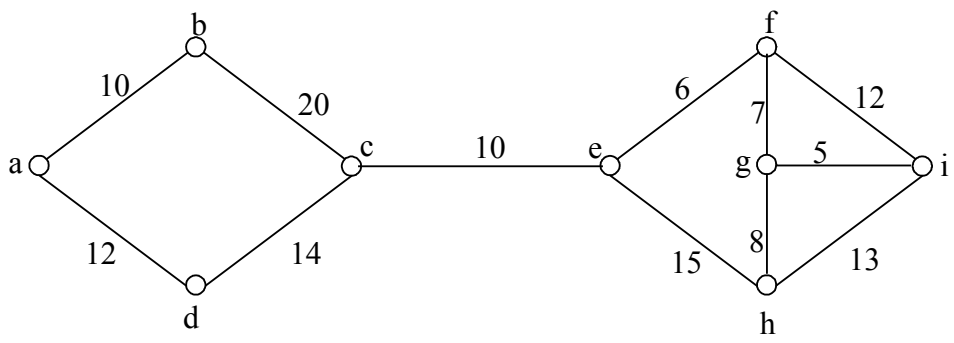
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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. I Semester (SVEC10) Supplementary Examinations July - 2012
DATA STRUCTURES
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. Let f(n) and g(n) be asymptotically positive function. Prove or disprove each of the following conjectures.
    a) f(n)=O(g(n)) implies log(f(n))=O(log(g(n)),where log(g(n))>=1 and f(n)>=1 for all sufficiently large 'n'.
    b) f(n)=O(g(n)) implies $2^{f(n)}=O(2^{g(n)})$.

2. a) Define the Abstract data type for Stack. Write an algorithm to implement stack ADT using linked list.
    b) Write an algorithm to convert a postfix expression into infix expression using stack.

3. a) Write an algorithm to insert and delete elements in a linear queue using singly linked List.
    b) Explain Shortest job first CPU scheduling algorithm with an example.

4. a) Write an algorithm to reverse singly linked circular list in place.
    b) Develop pseudo code for a function that adds two polynomials of degree two in one variable represented as singly linked lists. Illustrate its working.

5. a) Explain in detail how Heap sort algorithm works with the help of an example.
    b) How many comparisons are made by Binary search for a successful search and for an unsuccessful search. Explain.

6. a) Write and explain a non- recursive algorithm for pre order traversal of a Binary tree with an example.
    b) Write a method to search for an element of a Binary Search Tree. What is its time complexity?

7. a) Explain Red-Black Tree with a example. How it is better than other balanced tree.
    b) Give a procedure which finds the balance factor at any stage during the creation of AVL tree.

8. a) What is a graph? Explain the two most common structures used to represent graphs.
    b) Explain Dijkstra algorithm with the help of an example.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. II Semester (SVEC10) Regular/Supplementary Examinations July - 2012
PROBABILITY AND STATISTICS
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove Baye's theorem.
    b) 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.

2. a) Define Probability distribution function and write the properties of Distribution function.
    b) X is a continuous random variable with probability density function given by

    $$f(x) = \begin{cases} k\,x^{\alpha-1}(1-x)^{\beta-1}, & 0 < x < 1, \quad \alpha > 0, \beta > 0 \\ 0, & otherwise \end{cases}$$

    Find k and mean value of X.

3. a) The mean and variance of a binomial variable X with parameters n and p are 16 and 8. Find $P(X \geq 1)$ and $P(X > 2)$.
    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.

4. a) Define Point Estimation and Interval Estimation.
    b) A population consists of five numbers 2, 3, 6, 8 and 11. Consider all possible samples of size 2 that can be drawn with replacement from this population. Find
        (i) The mean of the population.
        (ii) The standard deviation of the population.
        (iii) The mean of the sampling distribution of means and
        (iv) The standard deviation of the sampling distribution of means.

5. a) Define Null Hypothesis, Alternative Hypothesis and critical region.
    b) In a survey of buying habits, 400 women shoppers are chosen at random in super market 'A' located in a certain section of the city. Their average weekly food expenditure is Rs. 250 with a S.D. of Rs. 40. For 400 women shoppers chosen at random in super market 'B' in another section of the city, the average weekly food expenditure is Rs 220 with a S.D. of Rs. 55. Test at 10% level of significance whether the average weekly food expenditure of the two populations of shoppers are equal.

6. a) Explain student's paired t-test.

b) The following table gives the number of aircraft accidents that occurred during the seven days of the week. Test whether the accidents are uniformly distributed over the week:

Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat
No. of accidents	14	16	8	12	11	9	14

7. a) Compute the co efficient of correlation between X and Y using the following data

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

b) Fit a parabola of second degree to the following data

X	0	1	2	3	4
Y	1	1.8	1.3	2.5	6.3

8. a) The average percentage of defectives in 27 samples of size 1500 each was found to be 13.7%. Construct a suitable control chart for this situation. Explain how the control chart can be used to control quality.

b) 20 tape-recorders were examined for quality control test. The number of defects for each tape-recorder are given below:

2,4,3,1,1,2,5,3,6,7,3,1,4,2,3,1,6,1,1,1.

Prepare a C- chart. What conclusions do you draw from it ?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. II Semester (SVEC10) Regular/Supplementary Examinations July - 2012
COMPUTER ARCHITECTURE AND ORGANIZATION
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the combinational circuit with its block diagram.
    b) Explain about Edge-Triggered flip-flop.

2. Explain bidirectional shift register with parallel load.

3. a) What is instruction cycle? Draw and explain.
    b) What is micro program sequence? Also explain the various types of interrupts.

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. a) Explain half adder and full adder circuit in detail
    b) How many 128×8 RAM chips needed to provide memory capacity of 2048 bytes?
        How many lines of address must be used to access 2048 bytes of memory?
        How many of these lines will be common to all chips? How many lines must be
        decoded for the line select?

7. a) Differentiate synchronous and asynchronous data transfer.
    b) Explain in detail programmed I/O and Interrupt driven I/O.

8. a) Discuss the characteristics of multiprocessors.
    b) Explain briefly about message passing multicomputers.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. II Semester (SVEC10) Regular/Supplementary Examinations July - 2012
OPERATING SYSTEMS
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the differences between symmetric and asymmetric multiprocessing. What are the advantages and disadvantages of multiprocessor systems?
    b) Define the essential differences between the following types of operating systems:
        i) Multi Programming   ii) Time Sharing

2. a) Discuss the criteria for choosing a file organization.
    b) Write in detail about different types of attributes and operations that can be provided for files by any typical operating system.

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. Define monitor. What are its characteristics? How monitors can be used for process synchronization.

5. a) Write Bankers algorithm to avoid the deadlock problem. Include safety algorithm also.
    b) Explain methods for deadlock prevention?

6. a) Discuss about Paging memory management scheme.
    b) How many page faults occur for FIFO and Optimal Page replacement algorithms for the following reference string , with four page frames?
        1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 9, 7, 8, 9, 5, 4, 5, 4, 2.

7. Explain the principles and goals of protection.

8. Explain in detail about various Fault Tolerance Techniques.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. II Semester (SVEC10) Regular/Supplementary Examinations July - 2012
OBJECT ORIENTED PROGRAMMING
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain the following:
   a) Principles of objected oriented programming.
   b) JVM and JRE architecture.

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) Explain character extraction concept using String handling functions?
   b) Define inheritance and give the different forms of inheritance.

4. a) What is an interface in Java language? How this can be used to get the functionality of multiple inheritance?
   b) What is CLASSPATH environment variable? Explain its use with example commands for Java program execution.

5. a) Explain the usage of try, catch and finally keywords with an example.
   b) Explain the creation of thread with Runnable interface with an example.

6. a) 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) Write short notes on AWT classes?
   b) Explain about semantic and low level events.

8. a) Write about creating a dialog box using Swing classes with sample code.
   b) Give an outline code for creating an Applet and the corresponding HTML file to invoke it.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Regular/Supplementary Examinations July - 2012

DATABASE MANAGEMENT SYSTEMS
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain different types of Database languages?
   b) With the help of a diagram, explain the various components of DBMS architecture?

2. a) Construct an ER-diagram for hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted.
   b) Discuss on various relational algebra operators with suitable Example.

3. Consider the following schema:
   Suppliers (sid: integer, sname: string, address: string)
   Parts (pid: integer, pname: sting, color: string)
   Catalog (sid: integer, pid: integer, cost: real)
   Write the following queries in SQL:
       a) Find the pnames of parts for which there is some supplier.
       b) Find the sids of suppliers who supply a red part & a green part.
       c) Find pnames of parts supplied by XYZ suppliers & no one else.
       d) For each part, find the sname of the supplier who charges the most for that part.
       e) For every supplier that only supplies green parts, print the name of the supplier.

4. Write a PL/SQL program for generating mobile telephone bill using cursors.

5. a) For the following relations schema tell whether it is in 3NF or not
   EMPLOYEE (E_code, E_name, Oname, Salary, Project_no, Termination_dateof_project), where each project has no unique termination_dateof_project if it is not in 3NF bring it into 3NF through normalization.
   b) Normalize the relation R(A, B, C, D, E, F, G, H) into the third normal form using the following set of FDs.
           $AB \rightarrow C$
           $BC \rightarrow D$
           $CDE \rightarrow ACH$
           $BH \rightarrow A$
           $D \rightarrow EF$.

6. a) Explain different properties of transactions to maintain data consistency & system failures in DBMS?
   b) What are the different phases in ARIES recovery algorithm?

7. a) Explain the 2PL with a suitable example.
   b) What is a heap file? What are the various operations that can be performed on them? Explain.

8. Discuss in detail about the extendible hashing.

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CODE No.:10MC2BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. II Semester (SVEC10) Supplementary Examinations January - 2012
PROBABILITY AND STATISTICS
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Give any two definitions of probability. State addition theorem of probability.
    b) A problem in statistics is given to three students A, B and C whose chances of solving the problem are 1/2, 1/3 and 1/4 respectively. What is the probability that the problem will be solved?

2. a) 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 defectives. A random sample of 20 is taken for inspection. Find the probability that
        (i) All are good bulbs
        (ii) At most there are 3 defectives bulbs
        (iii) Exactly there are three defective bulbs.
    b) The weekly wages of 1000 workmen are normally distributed around a mean of Rs.70 with a standard deviation of Rs.5. Estimate the number of workers whose weekly wages will be
        (i) Between Rs.69 and Rs.72   (ii) Less than Rs.69   (iii) More than Rs.72.

4. a) The mean and standard deviation of a population are 11,795 and 14,054 respectively. What can one assert that 95% confidence about the maximum error if $\overline{X}$ = 11,795 and n = 50. And also construct 95% confidence interval for the true mean.
    b) A normal population has a mean of 0.1 and standard deviation of 2.1. Find the probability that mean of a sample of size 900 will be negative.

5. a) In a sample of 1000 people in Andhra Pradesh 650 are Rice eaters and the rest are Wheat eaters. Can it be concluded that both Rice and Wheat are equally popular in Andhra Pradesh at 1% level of significance?
    b) Test for the significance of the difference between the means of the sample from the following data:

	Sample size	Mean	Standard Deviation
Sample I:	100	60	4
Sample II:	200	65	5

6. a) What are the applications of χ^2 and F tests?
    b) A certain stimulus administered to each of the 12 patients resulted in the following increase of blood pressure: 4, 3, 7, -3, 0, 5, -2, 1, 6, 4, 2, and 5. Can it be concluded that the stimulus will, in general be accompanied by an increase in blood pressure? (Table value is 1.80 at 5% l.o.s).

7. a) Fit a straight line y = a + bx to the following data:

x:	1	2	3	4	5
y:	2	5	4	9	10

    b) Calculate the Rank Correlation coefficient between x and y from the following data:

x:	78	89	97	69	59	79	68	57
y:	125	137	156	112	107	136	123	108

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.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. II Semester (SVEC10) Supplementary Examinations January - 2012
COMPUTER ARCHITECTURE AND ORGANIZATION
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Write a short notes on logic gates.
    b) Simplify the following Boolean expression in both sum of products form and product of sums form.
      $$F(A,B,C,D)=\sum(0,1,2,5,8,9,10)$$

2. a) Differentiate between combinational circuits and sequential circuits and draw the block diagram for both circuits.
    b) Define multiplexer. Draw the block diagram of a 4-to-1 line multiplexer and explain its operation by means of a function table.

3. a) Explain different addressing modes in detail.
    b) Write short notes on RISC.

4. Explain program interrupt and interrupt cycle.

5. What are the different circuits associated with the accumulator? Explain.

6. a) Define microprogramming. Write a short note on microinstruction format.
    b) Explain conditional branching in detail.

7. a) Explain asynchronous communication interface in detail with a neat diagram.
    b) Write a short notes on direct memory access (DMA)

8. a) Explain pipelining concept in detail.
    b) Write a short notes on shared memory multiprocessors.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. II Semester (SVEC10) Supplementary Examinations January - 2012
OPERATING SYSTEMS
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   **Max Marks: 60**
Answer any FIVE questions
All questions carry equal marks

1. Explain about evolution of operating systems in detail.

2. a) Explain the typical operations performed on a file and a directory.
   b) Write about Acyclic Graph-Structured file-directory structure.

3. What is the purpose of processor scheduling? Explain various types of scheduling for uniprocessor system.

4. a) What are monitors? How monitors be used for synchronization problems?
   b) What is the Readers-writers problem? How semaphores are useful for the solution?

5. Explain Banker's algorithm in detail.

6. a) In a fixed partitioning scheme, what are the advantages of using unequal size partitions?
   b) What is the difference between internal and external fragmentation?
   c) Compare logical, relative and physical addresses?

7. a) Explain about Domain of Protection and the principles of protection?
   b) Write about Os security.

8. Discuss in detail Byzantine Faults and Agreement protocols.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Supplementary Examinations January - 2012

OBJECT ORIENTED PROGRAMMING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the benefits and applications of OOP in detail.
    b) What are different relational operators in Java? Write a Java program to explain the use of relational operators.

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) Explain two situations when String buffer would be used for string handling. Also write a program which appends the string "programming " to the string "java". Print the final content of the appended string.
    b) Explain dynamic method dispatch with an example.

4. a) What are the advantages of using interfaces in Java? How are they different from Abstract Classes?
    b) How do we design a package? What are the steps to add classes and interfaces in a package? Give suitable example.

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) What is the difference between Readers/writers classes and Stream classes for I/O in java language?
    b) Write a Java program for filtering an input text file and generating another output text file. Filter must remove all articles (a, an, the) from the input file.

7. a) Describe AWT components.
    b) Describe different types of Layout Manager (Flow Layout, Grid Layout, and Border Layout) in Java using suitable examples.

8. a) Discuss about top level containers.
    b) Write about the inheritance hierarchy of applets.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Supplementary Examinations January - 2012

DATABASE MANAGEMENT SYSTEMS
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1.　a) Explain the component modules of a DBMS and their interactions with the architecture.
　　b) Explain about Database System Environment.

2.　a) Explain about Entity Integrity, Referential Integrity, Foreign keys.
　　b) Define the concept of aggregation. Give an example of where this concept is useful.

3.　a) Consider the following relation schema:
　　　　Emp(<u>empno</u>, name, office, age)
　　　　Books(<u>isbn</u>, title, authors, publisher)
　　　　Loan(<u>empno, isbn</u>, date)
　　　　　　Write the following queries in SQL
　　　　　　　　i)　Print the names of employees who have borrowed any book published by
　　　　　　　　　　Mc Graw-Hill
　　　　　　　　ii)　For each publisher, print the names of employees who have borrowed more than
　　　　　　　　　　five books of that publisher.
　　b) Explain different types of outer joins with an example?

4.　a) Write a PL/SQL program for factorial of the given number.
　　b) Write a PL/SQL program to check whether the number is Armstrong number or not.

5.　a) What are the problems caused by redundancy & decompositions in the databases?
　　b) Give a set of FD's for the relational schema R (A, B, C, D) with primary key AB under
　　　which R is in 1NF but not in 2NF?

6.　a) What are the properties of transaction? Explain briefly.
　　b) What are ACID properties? Explain.

7.　a) Explain in detail about concurrency control without locking.
　　b) Write short notes on deadlocks.

8.　Explain tree based indexed sequential access method with an example?

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CODE No.:10MC3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. III Semester (SVEC10) Regular Examinations January - 2012
OPERATIONS RESEARCH
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. Explain big -M method to solve a linear programming problem.

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 transport corporation has three vehicles in three cities. Each of vehicles can be assigned to any of the four other cities. The distance differs from one city to the other as under

	1	2	3	4
A	33	40	43	32
B	42	30	31	24
C	40	31	37	31

   You are required
   a) To assign a vehicle to a city in such a way that the total distance traveled is minimized.
   b) Formulate a mathematical model of the problem.

4. By a suitable example explain the graphical method to solve a two person zero sum game problem.

5. The original cost of the machine is Rs 10,000/-.Maintenance cost vary as given below,

Year	1	2	3	4	5	6	7
Maintenance Cost	500	800	1200	1500	2000	2500	3000

   If the money is discounted at 10% per year, what is the optimum replacement policy.

6. For a fixed order quantity system, find expressions for (i) Economic order quantity (ii) Optimum buffer stock (iii) Reorder level and solve the inventory problem for the following data

Annual consumption	= 10,000 Units
Cost of one unit	= Rs. 100
Set up cost	= Rs. 12 per production run
Inventory cost /unit / unit time	= Rs. 0.024

7. a) A leading orchard owner of Srinagar has annual demand of 60,000 wooden packing boxes. The cost of placing an order is Rs 800 and the inventory carrying cost is 25 percent. The price of a packing case is Rs. 10. The supplier of the boxes offers 2% discount if 10,000 or more boxes are purchased and 4% if 15 000 boxes are purchased. What should be the quantity of boxes ordered and should the orchard owner accept the discount?
   b) Explain the steps to develop an Inventory model.

8. Draw the network diagram and find the critical path and duration of the following project. Also find total free float and Independent float for each activity.

Activity	a-b	a-c	a-d	b-c	b-f	c-e	c-f	d-e	e-f	f-g
Duration	13	15	24	20	16	15	17	12	12	10

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. III Semester (SVEC10) Regular Examinations January - 2012
WEB APPLICATION DEVELOPMENT
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Give the usage of the following HTML tags:
       (i) OL   (ii) IMG   (iii) TABLE   (iv) IFRAME
   b) What are the different ways of specifying style rules for an element? Explain with example statements.

2. How will you declare an attribute and an entity using DTD. Explain them with suitable examples.

3. Write a Java program to display a bar chart from a database query using JDBC.

4. Explain the life cycle of a servlet with a necessary illustration.

5. Give the list of implicit objects of a JSP page and explain the purpose of those objects.

6. How to handle the methods and variables using JSP. Explain them with an example.

7. Explain the various advanced action classes of struts application development.

8. Explain the working of remote procedure calls (RPC).

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. III Semester (SVEC10) Regular Examinations January - 2012
COMPUTER NETWORKS
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1.   Explain the functions of OSI Reference model.

2.   a) Describe Electromagnetic Spectrum.
         b) Write about Multiplexing.

3.   Write a shorts note on
             a) Bluetooth.
             b) Network Topologies.

4.   Explain Network Layer design issues.

5.   What is TCP transmission policy? Explain in detail.

6.   Write short notes on the following:
                 a) WWW
                 b) Digital Signatures
                 c) DNS.

7.   Write short notes on the following:
                 a) Substitution ciphers
                 b) Message digests.

8.   Explain about E-mail security, Web security.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. III Semester (SVEC10) Regular Examinations January - 2012
DATA WAREHOUSING AND DATA MINING
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   Max Marks: 60
Answer any FIVE questions
All questions carry equal marks

1. Define data warehouse. Explain the steps for the design of data warehouse.

2. a) Explain fact constellation schema.
    b) Write a detail note on meta data repository.

3. a) What are different types of OLAP?
    b) Explain various OLAP operations?

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. Write Apriori algorithm and explain the same?

6. a) Define Classification Problem and list various models used for classification.
    b) Explain any three measures for selecting right attribute for splitting in a decision tree.

7. a) How to compute the dissimilarity between the objects described by categorical, ordinal and ratio-scaled variables?
    b) Describe Chameleon algorithm used for clustering.

8. Explain about Text-Mining?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Regular Examinations January - 2012

SOFTWARE ENGINEERING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions

All questions carry equal marks

1. What is software and software engineering? Discuss CMMI model and software myths.

2. Explain in detail the Waterfall model. List its advantages and disadvantages.

3. Elaborate on Requirement Engineering Process.

4. a) What are the characteristics of a good software design? Explain.
   b) Briefly explain various Architectural Styles.

5. Describe the golden rules of user interface design.

6. What is software testing? Discuss the various test strategies.

7. Discuss control structure testing.

8. a) Explain Software Risks.
   b) Describe about Software Reengineering Process Model.

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CODE No.:10MC3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. III Semester (SVEC10) Supplementary Examinations July - 2012
OPERATIONS RESEARCH
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. Explain big -M method to solve a linear programming problem.

2. A steel company has three furnaces and five rolling mills. Transportation cost (rupees per quintal) for sending steel from furnaces to rolling mills is given in the following table. How should they meet the requirement?

Furnaces	M1	M2	M3	M4	M5	Availability (Q)
A	4	2	3	2	6	8
B	5	4	5	2	1	12
C	6	5	4	7	3	14
Requirement Quintal	4	4	10	8	8	

3. Solve the following unbalanced assignment problem of minimizing total time for doing all the jobs.

Jobs

Operator	1	2	3	4	5
A	8	3	6	3	7
B	3	6	9	8	8
C	9	9	7	9	9
D	7	2	3	5	6
E	10	3	8	9	7
F	5	7	4	7	8

4. Determine the optimal sequence of performing 5 jobs on 4 machines. The machines are used in order M1, M2, M3 and M4 and the processing time is given below.

Job	M1	M2	M3	M4
1	8	3	4	7
2	9	2	6	5
3	10	6	6	8
4	12	4	1	9
5	7	5	2	3

5. The 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 : 100   250   400   600   900   1250   1600   2000

When should the machine be replaced?

6. A contractor has to supply 10,000 bearings per day to an automobile manufacturer. He finds that when he starts a production run, he can produce 25,000 bearings per day. The cost of holding a bearing in stock for one year is Rs. 0.20, and set up cost of a production run is Rs. 180. How frequently should production run be made?

7. a) Calculate economic lot size in units and total variable costs for the following items. Assume an ordering cost of Rs 10 and Carrying cost of Rs 20%.

Item	Annual Demand	Unit Price (Rs)
X	4000	4
Y	8000	2
Z	12000	8

Also compute
   i. EOQ in rupees and in years of supply
   ii. EOQ frequency
b) Describe the basic characteristics of an inventory system.

8. Compare CPM and PERT explaining similarities and mentioning where they mainly differ.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Supplementary Examinations July - 2012

COMPUTER NETWORKS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain OSI reference model in detail.

2. Explain the Switching methods with suitable diagrams?

3. Write a shorts note on
   a) Bluetooth.
   b) Network Topologies.

4. Explain about Stop-and-Wait protocol.

5. Explain TCP Header frame format.

6. Explain about TCP and UDP?

7. Explain about RSA algorithm with example?

8. What is Steganography? Explain any two Authentication Protocols.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Supplementary Examinations July - 2012

DATA WAREHOUSING AND DATA MINING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1.   Define data warehouse. Explain the steps for the design of data warehouse.

2.   With a neat diagram explain the schemas for Star and Fact Constellation?

3.   Explain in detail about the OLAP operations with an example.

4.   Explain about data integration & transformation?

5.   Discuss in detail about how to mine various kinds of association rules?

6.   Explain in detail about the how a "naive Bayesian" classifier works.

7.   Discuss the data mining functionalities applicable to time series data. Quote suitable examples in the discussion.

8.   Explain about Multimedia mining?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. III Semester (SVEC10) Supplementary Examinations July - 2012
SOFTWARE ENGINEERING
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1.   a) Define Software and Software Engineering? Describe the characteristics of Software.
      b) Explain the generic process model framework.

2.   Compare and contrast Incremental Process Models and Evolutionary Process Models.

3.   State and explain functional and functional requirements in detail.

4.   Explain any six design concepts in detail.

5.   Explain user interface analysis and design.

6.   Explain the test strategies for object oriented software.

7.   Explain White-Box testing in detail.

8.   Explain risk identification, risk monitoring and risk management.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Regular Examinations July – 2012

ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCE MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Define Nature & Scope of Management. What are the 14 principles of Management?

2. What do you understand by the concept of organizational behaviour? Elucidate the approaches to the study of organizational behaviour.

3. Discuss the theories of personality. Explain the organizational application of personality.

4. Define learning. Briefly narrate the important theories of learning.

5. Explain the evaluation process of Human Resource Management. What are the objectives of Human Resource Management?

6. What are the challenges faced by the organization in terms of Human Resource Planning?

7. What are the steps involved in selection process?

8. Discuss globalization and Human Resource Management. What are the challenges faced by call centers?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Regular Examinations July - 2012

UNIX PROGRAMMING USING C ++
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1.   Explain the networking commands and their usage with examples.

2.   a) Discuss the shell responsibilities.
        b) Explain about pipes, their input/output redirection with examples.

3.   Explain the concepts of POSIX.1 FIPS Standards and X/Open Standards.

4.   Explain the UNIX and POSIX development environment.

5.   Explain the directory file APIs and device file APIs.

6.   Discuss the features of Interval timers, POSIX.1b timers and usage of timer class.

7.   What are POSIX .1b messages? Explain the concept of UNIX System V semaphores.

8.   Explain the concepts of TLI and datagram with examples.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Regular Examinations July - 2012

MULTIMEDIA APPLICATION DEVELOPMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions

All questions carry equal marks

1. Explain different color models in video.

2. Briefly discuss about animation Sequence and Computer animation languages.

3. What are the most popular file formats in image? Explain in detail.

4. What is static variable and static method? How these are useful explain.

5. Explain the concept of inheritance in action script with an example.

6. a) What is "Motion Compensation (MC)" in Video compression?
   b) Give the steps of video compression algorithm when MC concept is adopted.

7. What are the various audio compression techniques? Explain briefly about one compression technique.

8. Write about Multimedia over IP.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Regular Examinations July - 2012

INFORMATION SECURITY

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about the Internet standards and RFCs.
      b) Explain Caesar Cipher and Monoalphabetic Cipher.

2. a) Explain Block Cipher design principles.
      b) Differentiate between end-to-end encryption with link encryption.

3. Explain DES encryption and decryption.

4. a) Explain about X.509 authentication services?
      b) Explain about Birthday Attacks.

5. a) Explain the importance and usage of the following in relation to PGP:
          i)   Session key
          ii) Signature
          iii) Public / Private keys.
      b) Describe how S/MIME works towards emerging as an industry standard for e-mail
          security at commercial and organizational use levels.

6. a) Draw and explain Encapsulating Security Payload.
      b) Differentiate Tunnel mode and Transport mode.

7. Explain how the following threats to web security can be defended by SSL.
          a) Known plain text dictionary attack
          b) Replay attack
          c) Password sniffing
          d) SYN flooding.

8. Explain about Virus and related threads?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.C.A. IV Semester (SVEC10) Regular Examinations July - 2012
SOFTWARE PROJECT MANAGEMENT
[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. With the help of a neat diagram explain Waterfall Model in detail?

2. a) Define the terms:
     i)   Round-trip Engineering
     ii) Forward Engineering
     iii) Reverse Engineering
   b) Explain the key practices that improve overall software quality.

3. Explain the Management Artifacts in detail?

4. a) With a neat diagram summarize the artifacts of the design set, including the architecture views and architecture description.
   b) List and describe the seven top level workflows.

5. a) Explain Cost and Schedule Estimating process?
   b) Explain the planning guidelines?

6. a) What are the main features of the default line-to-business organization?
   b) Explain the typical automation and tool components that support the process workflows.

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 software management best practices.
   b) Write about next generation cost models.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
GENERAL MICROBIOLOGY AND BIOCHEMISTRY
[Bio-Technology]

Time: 3 hours   **Max Marks: 60**
Answer any FIVE questions
All questions carry equal marks

1. What is sterilization ? Write various methods of sterilization.

2. Write short notes on-
    a)   Retroviruses
    b)   Factors affecting microbial growth.

3. Describe the various new approaches used in bacterial classification.

4. Explain the basic principle and various techniques used in bacterial classification.

5. List out the organelles of bacteria and write their functions in detail.

6. Write a note on elementary composition and nutrient requirement of microorganisms.

7. Write about the microbial nutrition and its process.

8. Discuss various industrially important microorganisms and a note on secondary metabolites.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012

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. Explain in detail *agarose* gel electrophoresis.

3. Discuss the steps involved in RNA synthesis? What is the difference in prokaryotic and eukaryotic transcriptional events?

4. Explain the control of gene expression in prokaryotes.

5. Explain the molecular mechanism of antisense molecules.

6. Comment on
    a) Mechanism of mutagenesis by physical and biological agents.
    b) Different types of mutations.

7. What are ribozymes ? Comment on their applications.

8. What is cloning? How would you clone a coat protein gene of an RNA virus into *E.coli* ?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
MICROBIAL ENGINEERING
[Bio-Technology]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the different methods of preservation of industrial strains.
    b) Explain the different methods of strain improvement for industrial strains.

2. a) Explain about factors influencing the choice of carbon sources used in the fermentation.
    b) What is the role of inhibitor in the fermentation media? Explain with suitable examples.

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. a) What are the advantages of statistical experimental design over one variable at a time approach?
    b) What is the significance of 't' test and 'F' test in statistical analysis?
    c) What is ANOVA and how is it useful in experimental design?

5. a) Explain about various steps involved in the response surface methodology?
    b) How do you optimize the fermentation medium by composite design method? Explain briefly.

6. a) What is survival curve?
    b) What is decimal reduction time? Derive an expression for it.

7. a) Briefly explain about Monod model in the development of different microbial growth kinetics.
    b) Aerobic degradation of benzoic acid by a mixed culture of microorganisms can be represented by the following reaction
    $$C_6H_5OH + a\ O_2 + b\ NH_3 \ \text{-->} \ c\ C_5H_7NO_2 + d\ H_2O + e\ CO2$$
    (Substrate)   (Bacteria)
    i) Determine a, b, c, d, and e if RQ = 0.9
    ii) Determine the yield coefficients, Yx/s and Yx/Ol.

8. a) What are the social considerations for the production of r-DNA products?
    b) Explain the model of gene expression.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012

IMMUNOLOGY

[Bio-Technology]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Describe in detail the differences between Natural and Acquired immunity.

2. What are lymphoid organs? Explain various types of lymphoid organs?

3. Explain the primary and secondary immuno-responses in humans.

4. Define antibody. Mention the types and functions of different antibodies.

5. Explain the following
   a) RIA
   b) ELISA.

6. Give a detailed account of structure of MHC molecules.

7. Define hypersensitivity. Mention the types and controlling measures of it.

8. What is autoimmunity? Explain various types of autoimmune diseases?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
PROCESS ENGINEERING PRINCIPLES
[Bio-Technology]

Time: 3 hours   Max Marks: 60
Answer any FIVE questions
All questions carry equal marks

1.   a) Distinguish between unit operation and unit process with suitable example.
b) Determine the dimension less groups formed from the variables involved in the flow of fluid
external to a solid. The force exacted on the body is a function of velocity of the fluid, density
of the fluid, viscosity of the fluid and characteristic length L. Use Buckingham π method.

2.   a) State the first, second and third laws of thermodynamics. Represent the Cornot cycle
schematically and discuss.
b) A thermodynamic system undergoes a cycle composed of a series of three processes
for which Q_1 = +10 kJ, Q_2 = +30 kJ, Q_3 = -5 kJ. For the first process, ΔU = +20 kJ,
and for the third process, ΔU = -20 kJ. What is the work in the second process, and the
network output of the cycle?

3.   a) Explain the physical significance of Reynolds number and describe Reynolds experiment.
b) Write Bernoulli's equation with modifications for frictional flow, pump work and kinetic
energy correction and explain each of term.

4.   a) What is priming and write various ways to over come these problems.
b) Write short notes on application of fluidized beds.
c) Write the conditions for which Ergen's equation is applicable.

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°C and the bottom plate is maintained at 30°C. If the thermal conductivity of
the liquid is 0.14 W/(m K), then calculate the steady state heat flux (in W/m²) assuming one-
dimensional heat transfer .

6.   a) What is radiation? What is the basic law used to determine the rate of heat transfer by
radiation? Explain.
b) Write short notes on the combined heat transfer by conduction, convection and radiation.

7.   a) Write short notes on film theory.
b) Ammonia is diffusing through a stagnant air film 0.25mm thick. The total pressure is 2 atm
and temperature of 50°C. Calculate the rate of diffusion of ammonia in kilograms per hour
through 1 sq m surface if the concentration difference across the film is 10% to 2% ammonia
by volume. The diffusivity of NH_3 in air at 0°C and 1 atm is 0.198 cm²/s.

8.   a) Explain the role of mass transfer in bioprocessing with suitable examples.
b) Describe and discuss counter-current liquid-liquid extraction with a neat schematic diagram.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012

ANALYTICAL TECHNIQUES IN BIOTECHNOLOGY

[Bio-Technology]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1.   Give an account of different blotting techniques and their applications.

2.   Explain the use of different types of rotors in centrifuges with suitable examples.

3.   What is Distribution co-efficient? Explain, how samples are separated in affinity chromatography.

4.   Explain the construction and applications of Uv-Visible spectrophotometer.

5.   What is mass spectroscopy? How do you determine the sequence of a protein by using MALDI?

6.   Explain :   a. Autoradiography
                      b. Micro arrays
                      c. Biological applications of radio isotopes

7.   Explain the following: a. Nucleic acid synthesizer
                          b. Lyophylization and its applications.

8.   Discuss the principles and applications of con focal microscopy.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular Examinations April - 2012
ADVANCED MATHEMATICS FOR COMMUNICATION SYSTEMS
[Communication Systems]

Time: 3 hours   **Max Marks: 60**
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.

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

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

2. a) Random variables X and Y have the joint density function
   $$f_{X,Y}(x,y) = \begin{cases} (x+y)^2/40 & -1 < x < 1 \; and \; -3 < y < 3 \\ 0 & elsewhere. \end{cases}$$
   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) Let X be a continuous random variable with PDF
   $$f_X(x) = \begin{cases} \dfrac{x}{12};1 \le x \le 5 \\ 0; elsewhere \end{cases}$$
   Find the probability density function of Y = 2x+3
   b) If X and Y are independent r.v then E[E[g(x,y)/x)]] = E[g(x,y)]
   c) Prove that "the variance of a weighted sum of uncorrelated random variables equals the weighted sum of the variance of r.v".

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) What are time averages of random processes?

b) Express amplitude modulation by random signals.

6. State and prove the properties of Narrow band random process.

7. a) Define Markov process, and time reserved Markov chains.
b) Express Recurrence properties & limiting probabilities of Markov chains.

8. a) What are characteristics of Queueing system.
b) Obtain the variance of queue length for M/M/I model.

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CODE No.:10MT16102

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular Examinations April - 2012
MODERN DIGITAL COMMUNICATION TECHNIQUES
[Communication Systems]

Time: 3 hours   Max Marks: 60
Answer any FIVE questions
All questions carry equal marks

1. a) With suitable sketches, give the time domain analysis of a linear system with random inputs.
   b) Find the transfer function of a matched filter for a 1µs long pulse having unit amplitude. Assume that AWGN is present having a spectral density $\frac{N_0}{2}$ = 10^{-7} V²/Hz. Sketch the output waveform when only the signal is present. What is the SNR at the filter output?

2. Determine the orthonormal basis functions for four signals shown in *Figure 1*.
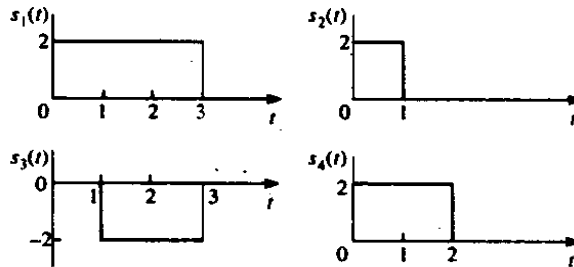
Figure 1: A set of digitally transmitted signals.

3.
   a) Explain the concept of $\frac{\pi}{4}$ QPSK transmission technique with relevant block diagram.
   b) Analyse the power spectral density of MSK signals as compared to QPSK and OQPSK signals.

4. a) Derive the expression for probability of error in case of DPSK. Compare its performance with that of BPSK and list out important conclusions.
   b) A matched filter is employed to decode a binary PSK sequence being received at a rate of 10kbps. The signals are received in the presence of AWGN having one sided spectral density of 10^{-6} W/Hz. What average power is required to achieve error probability of 10^{-6}?

5. a) State and explain the term "inter-symbol interference (ISI)." List out the techniques used to combat ISI.
   b) Draw the block diagram of decision feedback equalizer and explain its operation.

6. a) What is a pseudo-Random sequence (PN) ? Explain about frequency HOP spreading and time HOP spreading.
   b) Write the difference between slow-frequency hopping and fast frequency hopping.

7. Generate a valid gold sequence of length 31 with suitable sketches, and verify its important property.

8. a) Explain the concept of delay-locked loop for pn travelling.
   b) Discuss the application of spread spectrum signals to communication systems.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular Examinations April - 2012
COMPUTER COMMUNICATION NETWORKS
[Communication Systems]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1.   a) Differentiate virtual circuit and datagram subnets.
        b) Explain about delay and loss in packed switched networks.

2.   a) Illustrate the basic operation of SMTP.
        b) Compare SMTP with HTTP.

3.   a) Give the overview of Transport Layer.
        b) What are the principles of TCP Congestion control?

4.   a) What is internet Control message protocol (ICMP).
        b) Explain about distance vector routing algorithm.

5.   a) Explain about Local Area Networks.
        b) What are different check summing Methods.

6.   a) Explain about Audio and video compression.
        b) Briefly describe Real time streaming protocol.

7.   a) What are the principles of Cryptography?
        b) With neat diagram explain about Firewall.

8.   a) What are the Principle Components of network management architecture? Explain.
        b) Give SMI base data types.

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CODE No.:10MT16105

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular Examinations April - 2012
INFORMATION AND CODING TECHNIQUES
[Communication Systems]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss source coding theorem and derive equation for efficiency.
    b) Consider a discrete memoryless source with source alphabet $\{S_0, S_1, S_2\}$ with respective probabilities $P_0 = 1/4$, $P_1 = 1/4$, $P_2 = 1/2$. Find entropy of the source.

2. a) A discrete memoryless source X has five symbols x_1, x_2, x_3, x_4 & x_5 with $p(x_1) = 0.4$, $p(x_2) = 0.19$, $p(x_3) = 0.16$, $p(x_4) = 0.15$ and $p(x_5) = 0.1$.
        i) Construct a Shannon - Fano code for X, and calculate the efficiency of the code.
        ii) Repeat for the Huffman code and compare the results.
    b) Define channel capacity. Explain the Trade-off between bandwidth and signal to noise ratio using Shannon-Hartley theorem.

3. a) Discuss briefly the importance of source coding and channel coding techniques in communication systems.
    b) Explain briefly error detection and error correction capabilities of linear block codes?

4. The parity check bits of a (8,4) block code are generated by $c_5=d_1+d_2+d_4$, $c_6=d_1+d_2+d_3$, $c_7=d_1+d_3+d_4$, $c_8=d_2+d_3+d_4$. Where d_1, d_2, d_3 and d_4 are the message bits.
    a) Find the generator matrix and the parity check matrix for this code.
    b) Find the minimum weight of this code.
    c) Find the error-detecting capabilities of this code.

5. a) Explain the rate distortion theorem.
    b) List out and explain the rate distortion function and properties.

6. a) Discuss Hamming codes advantages and disadvantages.
    b) Derive an encoder and decoder for the (15, 11) cyclic Hamming code generated by $g(x) = 1 + x + x^4$. Also explain the properties of syndrome polynomial.

7. a) Explain different types of decoders for cyclic codes.
    b) Consider (15, 7) double error correcting code with $g(x) = x^8 + x^7 + x^6 + x^4 + 1$. Compute syndromes and error positions where error occurred.

8. a) What is burst error? How these types of errors can be corrected.
    b) Discuss the decoding procedure for BCH codes.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular Examinations April - 2012
RADAR SIGNAL PROCESSING
[Communication Systems]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the radar system with neat diagram.
   b) A radar signal takes 200μsec to travel towards the target and back. Find the range of the target.

2. a) For the matched filter show that the ratio of the peak signal power to the mean noise power is simply twice the energy E contained in the signal divided by the noise power per hertz of bandwidth N_0.
   b) Describe the characteristics of the matched filter.

3. Explain about radar detector characteristics.

4. How the waveform transmitted by a radar can affect the following
         a) Target detection   b) Measurement accuracy
         c) Resolution   d) Ambiguities
         e) Clutter rejection
   How ambiguity diagram can be used to access the above effects quantitatively.

5. a) Discuss and compare various methods of generating and compressing linear FM waveforms.
   b) What is the significance of spectral shaping filter in the generation and compression of linear FM signals.

6. a) Explain about the significance of phase coding methods in determining peak side lobe ((PSL), integrated side lobe level (ISL) and loss in processing gain (LPG) in radar signals.
   b) Explain about 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) Explain about limitations of pulse compression methods.
   b) Compare and discuss about various pulse compression methods.

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CODE No.:10MT23803

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular Examinations April - 2012
DETECTION AND ESTIMATION OF SIGNALS
[Communication Systems]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) What is Neyman-Pearson Test and how to calculate the False alarm probability?
    b) Given the conditional densities

    $$P\left(\frac{y}{m_1}\right) = \frac{1}{\sqrt{2\pi}\,\sigma}\exp\left(\frac{-(y-\mu_1)^2}{2\sigma^2}\right) \;; \quad P\left(\frac{y}{m_2}\right) = \frac{1}{\sqrt{2\pi}\,\sigma}\exp\left(\frac{-(y-\mu_2)^2}{2\sigma^2}\right)$$

    With $\mu_1 > \mu_2$. Using probability of error criterion, obtain the likelihood ratio, decision rule and total probability of error.

2. a) Explain how the matched filter maximizes the output signal-to-noise ratio?
    b) Find an expression for the probability of error for the problem of detection of equal energy, orthogonal signals, observed in additive, white Gaussian noise. In this case, the signals $y_i(t)$ are such that

    $$\int_{t_0}^{t_f} y_i(t)y_j(t)dt = \begin{cases} \in & i = j \\ 0 & i \ne j \end{cases}$$

3. a) How matched filter is considered as an optimum filter - Justify it and derive the expression for transfer function of the same.
    b) Explain how a matched filter is used for smoothing the signal against the noise.

4. a) Define a cost functions corresponding to squared error, absolute value of error and uniform cost and explain them with neat sketch.
    b) Why Mean Square Error Estimator is called conditional mean estimator?

5. a) Obtain the maximum likelihood estimator, observed in additive noise, the observations given by $y_i = \theta + \eta_i \quad i = 1,2,...N$

       Assuming that η_i are independent, identically distributed Gaussian random variables with zero mean and variance σ_n^2 and θ is Gaussian zero mean with variance σ_θ^2 .
    b) Compare Linear and non-Linear estimators.

6. Define the following terms with respect to estimators:
       a) Bias   b) Efficiency   c) Sensitivity   d) Bound

7. Draw the structure of Kalman filter and explain how it works like estimator and also write the extended Kalman algorithm.

8. Write a short notes on the following:
    a) Concept of sufficient statistics
    b) Maximum likelihood estimation.

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CODE No.:10MT10503

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
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) Express the following polynomial through an array 4x^6-2x+5 ? Are there any
       disadvantages of using an array ? if so give an alternative best implementation?
    b) What is an abstract data type? Give examples for the implementation of the same?

2. a) Explain the asymptotic notations used in algorithm analysis.
    b) Prove that f(n)=O(h(n)) where f(n)=O(n) and g(n)=O(h(n)).

3. Write non recursive algorithm to traverse a direct graph using both breadth first search and depth first
    search approaches.

4. a) Define binary search tree? Specify the properties of an non empty binary
       search tree? Use examples wherever necessary.
    b) Start with a complete binary tree with 10 nodes and place the keys [1,2,3, 4, 5, 6, 7, 8, 9,10].
       One key per node, so that the result is a binary search tree, label each node with
       its left-size value.

5. a) How we can insert a key into Red-Black tree. Explain.
    b) List the merits and demerits of closed and open hashing techniques.

6. Discuss Kruskal's algorithm for finding minimal spanning tree with the help of an example. Analyze its
    time complexity.

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. Apply LC-Branch and Bound for Traveling Sales Person problem.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular Examinations April - 2012
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 difference between point-to-point and broadcast channels? For which of the networks/topologies the point-to-point and broadcast channels are useful. Explain the issues associated with them.
   b) What are the differences between Hub, Switch and Router?

2. a) What is the need for address resolution?
   b) Explain the working of ARP and RARP protocols.

3. Explain in detail about Internet Control Message Protocol.

4. a) What is UDP? Write about UDP operation.
   b) Briefly explain about TCP flow control.

5. a) Write about Open Shortest Path First protocol.
   b) Write about different Intradomain routing protocols.

6. Explain:
   a) DNS records
   b) DHCP
   a) DNS name space

7. Explain in detail about FTP.

8. a) Explain the architecture of E-mail with relevant scenarios.
   b) Explain about Realtime Transport Protocol (RTP).

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular Examinations April - 2012
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 meaning of 'Trojan horse' and 'Trap doors'.
  b) Distinguish between 'physical security' and 'logical security'.
  c) Explain the significance of the following statement: 'The Complexity of security problems depends on the semantic nature of a database".

2.   a) Describe the six primitive operations of the access matrix model.
  b) Describe the Take - Grant model. State its limitations.

3.   a) Explain the important features of Discretionary Access Control (DAC) method and compare it with Role based Access Control (RBAC).
  b) Discuss the different types of users in accessing Database Application security.

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) Distinguish between static and dynamic statistical databases (SDB).
      Why is protection of a dynamic SDB more complex?
  b) With reference to an SDB (SDB), describe restriction-based techniques.

6.   a) Who is a clandestine user? How can they be detected?
  b) Describe the various elements of IDEAS Security model.

7.   Explain:
        a) Intrusion Detection system and
        b) Intrusion Prevention system.

8.   Write explanatory notes on
        a) Hippocratic databases.
        b) Database auditing.

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CODE No.:10MT16303

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular Examinations April - 2012
NETWORK MANAGEMENT SYSTEMS
[Computer Networks and Information Security]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about Case histories of networking and management?
    b) Explain about goals and functions of network management system?

2. Explain in detail about Information and Organization model?

3. a) Explain in detail about History of SNMP management and SNMP model?
    b) Describe the Internet organizations and Standards?

4. What are the sub modules involved in SNMPv2 module? Explain them in Detail?

5. a) Explain in detail about SNMPv3 Applications?
    b) Explain in detail about Access Control?

6. Explain in detail about RMON 1, RMON 2 and ATM.

7. Explain in detail about Integrated View and Implementation issues of TNM.

8. a) Write short notes on WAN.
    b) Write short notes on Fault Tolerant Network Management.

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CODE No.:10MT20502

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular Examinations April - 2012
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? Explain how data mining is a step in the knowledge discovery process?
    b) Explain the need for preprocessing of data? Explain the process of data integration?

2. a) What is data discretization? Explain the concept hierarchy generation for numeric data.
    b) Explain various data cleaning methods.

3. Write a note on various categories of OLAP tools.

4. a) Explain Apriori algorithm with an example.
    b) Explain market basket analysis and its relevance to association rule.

5. What is classification? How classification performed using decision tree induction? Explain with an example.

6. a) Discuss about the categorization of major clustering methods.
    b) Explain in detail about partitioning methods and hierarchical methods.

7. a) Discuss the methodology for stream data processing.
    b) Discuss about mining sequence patterns in biological data.

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.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular Examinations April - 2012
SOFTWARE SECURITY ENGINEERING
[Computer Networks and Information Security]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain different threats to software security?

2. a) Explain about the influential properties of secure software?
    b) Explain about the core properties of secure software?

3. Explain about the requirements elicitation for secure software?

4. a) What do you mean by architectural risk analysis?
    b) What are the different security principles and its guidelines?

5. a) What are the different coding practices that are to be followed throughout SDLC in order to develop secure software?
    b) What are the different security testing considerations need to be made while testing the software?

6. a) Explain about complexity with respect to secure software analysis?
    b) Explain wide spectrum of failures in software?

7. Explain about the security and project management?

8. Explain about the diagnosing metrics in software security?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
COMPUTER ARCHITECTURE
[Computer Science]

Time: 3 hours

Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) A majority element has 3 inputs and one output. The value of the output is the same as that on a majority of the inputs (2 inputs or all 3). Draw a truth table and write down the minterm and maxterm representations of the output function.
    b) You are given a two n-bit comparators. Each comparator, given numbers A and B, provides output to indicate $A > B, A = B, A < B$. indicate how these can be connected in cascade to form a Z_n-bit comparator.

2. a) Categorize the IEEE 754 formats for floating point numbers , specify its formats and give an example for any one of the format.
    b) Develop a flow chart for the processing a program using IAS computer.

3. a) What do you mean by 'register transfer'? What is the importance of a 'control function' in register transfer explain with example.
    b) What is the use of a Bus in any microcontroller/processor. Draw and explain Bus system for 4 registers.
    c) Show the block diagram of the hardware that implements the following register transfer statement.
    $$yT_2 : R_2 \leftarrow R_1, \ R_1 \leftarrow R_2.$$

4. a) In certain scientific computations it is necessary to perform the arithmetic operator $(A_i + B_i) (C_i + D_i)$ with a stream of numbers. Specify a pipe line configuration to carryout this task. List the contents of all registers in the pipeline for $i=1$ through 6.
    b) Design an array multiplier that multiplies two 4-bit numbers. Use AND gates and binary adders.

5. a) Explain briefly strobe and handshake mechanisms of data transfers. What is the advantage of handshake over strobe?
    b) Explain DMA control and transfer and its importance in a computer system.

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) Explain DMA in detail.
    b) List various asynchronous data transfer modes? And explain any one of them.

8. What is the importance of interconnection mechanism for multi processors? And discuss about some interconnection mechanisms with advantages and disadvantages.

CODE No.:10MT10502

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
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 product of sum of canonical forms of the following formula.
   $(P \wedge Q \wedge R) \vee (\neg P \wedge R \wedge Q) \vee (\neg P \wedge \neg Q \wedge \neg R)$
   b) Show that $S \vee R$ is tautologically implied by $(P \vee Q) \wedge (P \rightarrow R) \wedge (Q \rightarrow S)$

2. a) Define lattice and write the properties of lattice.
   b) Let G be a group. Then prove that $Z(G) = x \epsilon G / xg = gx$ for all $g \epsilon G$ is a subgroup of G.

3. a) Solve the recurrence relation $a_r - 4a_{r-1} + 4 a_{r-2} = 0$, given that $a_0 = 1$ and $a_1 = 6$.
   b) A palindrome is a word that reads the same forward or backward. How many seven-letter palindromes can be made out of the English alphabet?

4. a) What are the two different ways to represent a graph in computer? Discuss their relative merits and demerits.
   b) Show that the sum of the in-degrees over all vertices is equal to the sum of the out-degrees over all vertices in any directed graph.

5. a) Explain different applications of finite automata.
   b) Define a DFA. Draw DFA which accepts even number of a's over the alphabet {a,b}.

6. a) Define a regular grammar for generating all strings from **{a, b}** with no more than three **a**'s. Test your grammar to derive **abbbaba**.
   b) How do you convert a left linear grammar to a right linear grammar? Give an example.

7. a) Convert the following grammar into Chomsky normal form
   $S \rightarrow aA/a/B/F$
   $A \rightarrow aB/E$
   $B \rightarrow aA$
   $F \rightarrow gFD$
   $D \rightarrow abd$
   b) Design a PDA to accept the following CFG.
   $S \rightarrow AA/a$
   $A \rightarrow SA/b.$

8. a) Discuss the Chomsky Hierarchy of languages.
   b) For the grammar shown below construct the sets of LR(0) items
   $S' \rightarrow S\$$
   $S \rightarrow aSb/ab.$

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
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) Express the following polynomial through an array $4x^6-2x+5$? Are there any
disadvantages of using an array ? if so give an alternative best implementation?
    b) What is an abstract data type? Give examples for the implementation of the same?

2. a) Explain the asymptotic notations used in algorithm analysis.
    b) Prove that $f(n)=O(h(n))$ where $f(n)=O(n)$ and $g(n)=O(h(n))$.

3. Write non recursive algorithm to traverse a direct graph using both breadth first search and depth first
search approaches.

4. a) Define binary search tree? Specify the properties of an non empty binary
search tree? Use examples wherever necessary.
    b) Start with a complete binary tree with 10 nodes and place the keys [1,2,3, 4, 5, 6, 7, 8, 9,10].
One key per node, so that the result is a binary search tree, label each node with
its left-size value.

5. a) How we can insert a key into Red-Black tree. Explain.
    b) List the merits and demerits of closed and open hashing techniques.

6. Discuss Kruskal's algorithm for finding minimal spanning tree with the help of an example. Analyze its
time complexity.

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. Apply LC-Branch and Bound for Traveling Sales Person problem.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
SOFTWARE ENGINEERING
[Computer Science]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about the unique nature of web apps.
    b) What is software, software engineering and process ?
    c) Is software a layered technology? Explain how.

2. a) List the principles to achieve agility.
    b) Explain about process technology, process and product.
    c) Write short notes on unified process? Explain.

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) What is the test strategy for object oriented software?
    b) Explain briefly about integration testing.

7. How are risks identified in the design of software? Suggest mechanisms to overcome the risks without affecting the functional and performance requirements ?

8. a) Explain briefly about the metrics for class oriented and object oriented design.
    b) What are the elements of software quality assurance?

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CODE No.:10MT10505

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
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 different classes of users that you come across in DB environment? How do they interact with DB system?
    (b) How do you represent n-ary relationship sets in ER diagram? Illustrate with suitable example?

2. (a) Consider a relation schema R = (A, B, C, D, E, F, G) and a set of FD's
        F = {A$\rightarrow$ ABCDEFG, CE$\rightarrow$ A, BD$\rightarrow$ E, C $\rightarrow$B} Give a loss less join, dependency preserving 3NF decomposition of R?
    (b) Define minimal cover. Find minimal cover for F = {ABCD$\rightarrow$ E, E$\rightarrow$ D, A $\rightarrow$B, AC$\rightarrow$ D} over the schema R (ABCDE). Is the competition of minimal cover unique?

3. (a) Consider the following relations in which the primary keys are underlined?
        Employee (emp# ,name, skill, pay)
        Position (position#, skill)
        Duty allocation (position# emp#, date, shift)
        Write the following queries in relational algebra?
         (i) Get names of employees not assigned a duty
        (ii) Get names of employee with highest pay
        (iii) Get all pairs of employee with same skill
    (b) Explain with example division operator in relational algebra. How does SQL implement in entity constraint and referential integrity constraint of relational data model. Explain with example.

4. (a) Let *Hostel = {Roll_no, Hostel_name, Room_no}, Student = {Roll_no, Student_name, Branch, Course, Year}*. Write SQL queries to find (i) List of students, containing each student's *Roll_no, Student_name,* who are not staying in any *Hostel*. (ii) List of students who are room-mates to the student with Roll_no = '10CSM520' and who are studying in CSE *Branch.*
    (b) Consider relations, *Employee = {Emp_no, Designation, Department_name, Salary}*. *Department = {Department_name, HOD_name}*. Note, HOD is an employee. Write PL/SQL code to raise salary of employees who are working in *CSE* department by 10% whose Designation is *'Professor'* and who are drawing salary less than Rs 50000. For HOD of CSE department, if he/she is a *Professor*, his/her salary hike should be 15% provided his/her salary is less than Rs 60000.

5. (a) Define hashing? Explain the differences between closed and open hashing and discuss the relative merits of each technique in database application?
    (b) Construct B tree for the following set of key values
            6   17   28   32   43   54   65   76   87   98   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 three.

6. (a) (i) What are the desirable properties of a transaction. (ii) Briefly describe about serial, nonserial and serializable schedules.

(b) Consider the three transactions T1, T2, and T3, and the schedules S1 and S2 given below. Find whether S1 and S2 are conflict serializable or not, and if they are conflict serializable find their equivalent serial schedules.

     T1 : $r_1(X)$; $r_1(Z)$; $w_1(X)$;
     T2 : $r_2(Z)$; $r_2(Y)$; $w_2(Z)$; $w_2(Y)$;
     T3 : $r_3(X)$; $r_3(Y)$; $w_3(Y)$;
     S1 : $r_2(Z)$; $r_1(X)$; $r_1(Z)$; $r_3(X)$; $r_3(Y)$; $w_1(X)$; $w_3(Y)$; $r_2(Y)$;$w_2(Z)$;$w_2(Y)$;
     S2 : $r_1(X)$; $r_2(Z)$; $r_3(X)$; $r_1(Z)$; $r_2(Y)$; $r_3(Y)$; $w_1(X)$; $w_2(Z)$; $w_3(Y)$; $w_2(Y)$;

7. (a) In distributed databases, what is distribution transparency? Briefly describe about distribution transparency for update applications.

(b) Discuss how costs and benefits of fragment allocation can be measured for both horizontal and vertical fragmentation.

8. (a) What are the typical security classifications? Discuss the simple security property and the *-property and explain the justification behind these rules for enforcing multilevel security.

(b) What are the differences among immediate, deferred and detached consideration and execution of active rule conditions?

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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 April - 2012
SOFTWARE TESTING METHODOLOGIES
[Computer Science]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. Write a short note on the following:
   a)   Testing versus debugging.
   b)   Functional versus structural testing.
   c)   Designer versus tester.
   d)   Modularity versus efficiency?

2. a) Explain about the implementation of path testing?
   b) Explain dependent and independent predicates?

3. Briefly Explain the Transaction Flow Testing techniques?

4. Explain the following:
   a) Ugly domains and how Programmers and testers treat them.
   b) Domain bugs and how to test for them.

5. Write about path expressions in logic based testing?

6. a) Write about testability tips?
   b) Explain the one-time ZCZC sequence detector state graph?

7. a) Explain the node reduction algorithm. Apply the node reduction algorithm for the following
      graph:

   b) Write briefly about the applications of node reduction algorithm.

8. a) Explain the methodologies to evaluate the automated testing tools?
   b) Explain how you will test an application using Win Runner?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
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 linear time invariant system has frequency response $H(e^{j\omega}) = \begin{cases} e^{3j\omega}; & |\omega| < \frac{2\pi}{16}\left(\frac{3}{2}\right) \\ 0; & \frac{2\pi}{16}\left(\frac{3}{2}\right) \le |\omega| < \pi \end{cases}$

The input to the system is a periodic unit impulse train with period N=16 $x(n) = \sum_{k=-\infty}^{\infty} \delta[n + 16k]$.
Find the output of the system.

2. a) What do you mean by minimum and maximum phase transfer functions? Explain.
b) Discuss about 'deconvolution' with suitable example.

3. a) Discuss about polyphase structures.
b) Realize the FIR transfer function
   $H(z) = (1 - 0.6z^{-1})^6 = 1 - 3.6z^{-1} + 5.4z^{-2} - 4.32z^{-3} + 1.944z^{-4} - 0.4666^{-5} + 0.0467z^{-6}$ as
   i) Cascade of 2 third - order sections.
   ii) Cascade of 2 second - order sections and 2 first - order sections.

4. a) Explain the procedure for the computation of 15 - point DFT using prime factor algorithm.
b) Explain the decimation in frequency FFT algorithm.

5. a) Define the terms expander and interpolation and explain how they are useful in sampling.
b) Derive the input - output relations of a fractional - rate sampling rate converter.

6. a) What is Periodogram? Explain it drawback
b) Explain how Welch method is differs from Periodogram?

7. Determine the power spectrum for the random process generated by the following
difference equations
   1) x(n)=w(n) - w(n-2)
   2) x(n)= - 0.18 x(n-1) + w(n)
   where x(n) is the output of the system and w(n) is a white noise process with variance σ_w^2.

8. Write short notes on the following.
   i) Discrete- time analytic signal generation
   ii) Spectral analysis of Non-stationary signals.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
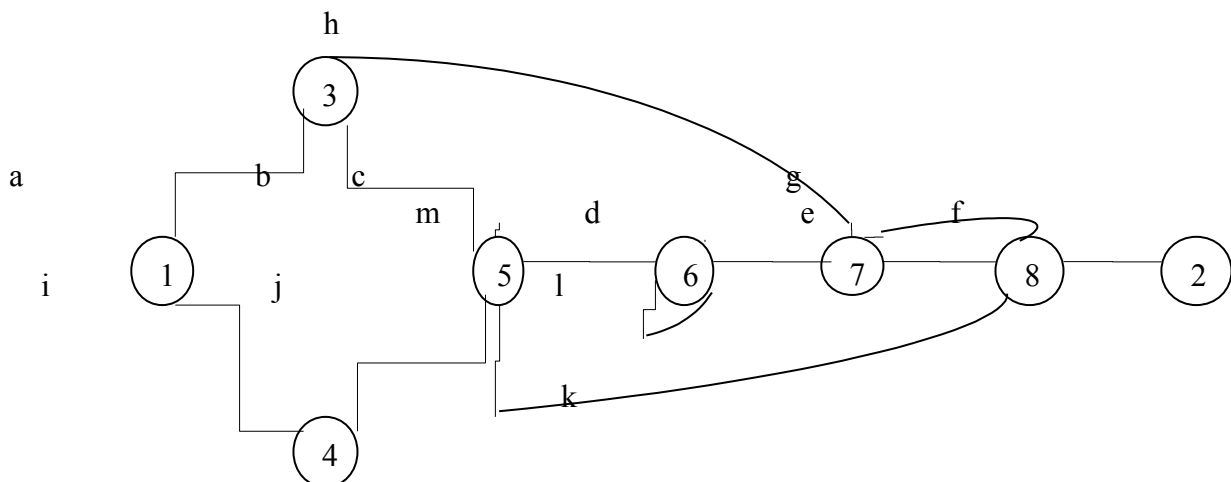M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
DIGITAL COMMUNICATION TECHNIQUES
[Digital Electronics and Communication Systems]

Time: 3 hours   **Max Marks: 60**
Answer any FIVE questions
All questions carry equal marks

1. a) The random Variables of Y is defined as $Y = ax^2 + b$, $a > o$
   Determine the PDF of Y in terms of PDF of X.
   b) Discuss Gaussian distribution and its PDF and CDF.

2. Use orthogonalization procedure, represent the different digitally modulated signals graphically and give your inference about each digital modulation scheme based on the graph.

3. a) Derive an expression for probability of error for memoryless M-ary orthogonal signals.
   b) Give the brief comparison of different modulation schemes in terms of probability of error.

4. a) What is matched filter? Derive the expression for SNR expression at the output of matched filter. Give its applications.
   b) Derive the expression for probability of error for binary modulation.

5. a) Discuss the effect of additive noise on the phase estimation.
   b) Draw the block diagram of carrier recovery for M-ary PSK using decision - feedback PLL.

6. a) With the help of block diagram, explain the working principle of Decision Feedback Equalizer in handling the channel effects and (or) ISI.
   b) Discuss about the optimization of transversal filter coefficients using any algorithm.

7. Generate two M-sequences of length 31 using shift registers, and find the autocorrelation and cross correlation between them.

8. Write the following:
   a) Delay locked loop.
   b) Tau-dither loop.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
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) Define state equivalence and explain with an example.
     b) Explain various objects of an ASM chart and draw an ASM chart for a function
        $f = \sum(1,4,5,6,7)$.

2.   a) An iterative network's cell output is equal to 1 if and only if the input pattern of the preceding
        cell consists of groups of 0's and 1's, such that each group contains an odd number of
        members. Construct cell table and realize the typical cell using AND, OR and NOT logic.
     b) Write a brief note on PLDs.

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) Define the terms singular cover, propagation D-cubes and D-intersection with respect to
        D- algorithm.
     b) Write the properties of Boolean differences.

5.   Apply fault detection experiment for the given machine and derive test sequence

PS	NS, Z	
	X = 0	X = 1
A	C, 0	A, 1
B	D, 0	C, 1
C	B, 1	D, 1
D	C, 1	A, 0

6. a) Write about PLA minimization.

b) All columns of the following PLA can be folded. Find SCF by FCM method. Draw the folded PLA

	A	B	C	D	E	F	Z1	Z2
1	1	1	2	2	2	2	0	1
2	1	2	1	2	1	2	0	1
3	2	2	1	1	1	2	1	0
4	2	2	2	1	1	2	1	0
5	2	1	1	2	2	2	0	1
6	1	2	1	2	2	2	1	0
7	2	2	2	1	2	1	1	0
8	2	2	2	2	1	1	1	0
9	2	2	2	1	1	1	1	0

7. a) Generate test vector for the given PLA output function.

$f = 0022 + 2011 + 0202$

b) What is the effect of multiple faults in PLAs.

8. Write a brief note on

(a) Races and Hazards   (b) Minimal closed covers

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
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 is an Embedded system? Give the overview of an embedded system with neat diagram.
    b) Give the classification and various applications of embedded systems.

2. a) With suitable architecture explain the functionality of CPU bus relevant to an embedded computing platform.
    b) How to perform communication using 'IEEE 488 bus' in an embedded system. Explain with neat schematic diagram.

3. a) Explain how to select software architecture for saving memory in an embedded systems.
    b) Illustrate round robin architecture with interrupts related to an embedded software development.

4. a) Explain how to integrate embedded software into target system while designing an embedded system.
    b) Discuss about linkers and locations for embedded software.

5. a) Draw and explain the architecture of the kernel pertaining to RTOS.
    b) Explain the interrupt servicing mechanism in an embedded system design.

6. a) Explain how a pipeline execution of a branch in ARM implemented.
    b) What is the meaning of following ARM condition codes?
        i) EQ   ii) NE   iii) MI

7. a) Draw and explain CRC card.
    b) Explain an OR state in state chart.

8. Explain in detail the following design example.
        Water tank monitor system.

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CODE No.:10MT13805

SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
MICROCOMPUTER SYSTEM DESIGN
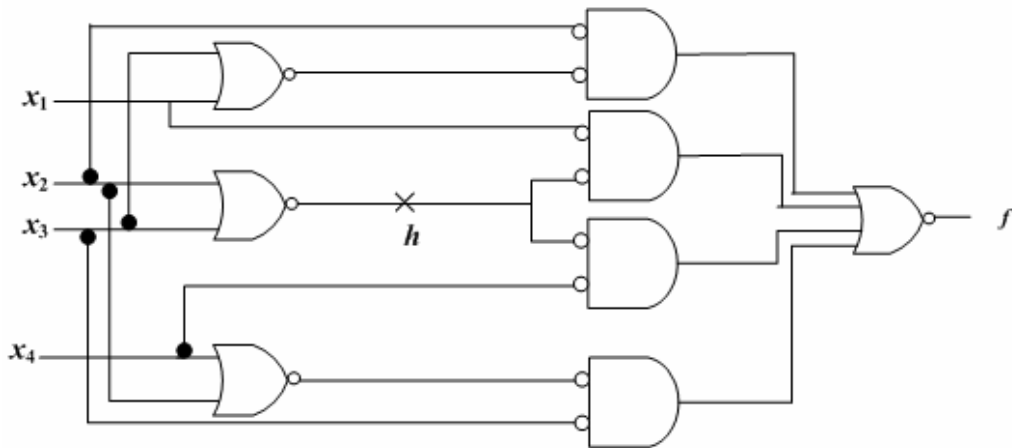**[Digital Electronics and Communication Systems]**

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the Bus interface unit of 8086. How does this improve the performance of a microprocessor?
b) Explain the following instructions of 8086 with an example each.
    (i) MOV   ES : [SI], CX.   (ii) IN O8H   (iii) CALL
c) Explain the Multiple pins function of Max. mode of 8086.

2. a) Distinguish between 8086 and 80286
b) Explain the architecture of 80286.

3. a) Compare the architectural features of 80386 and 80486.
b) What is memory paging?

4. a) What is the cache structure supported by Pentium?
b) Explain the Pentium register organization and format
c) Explain the following
       (i) Super Scalar architecture.
       (ii) Branch prediction logic.

5. a) What are the special registers of P4?
b) Explain the architecture of Pentium 4.

6. a) Differentiate between memory mapped I/O and I/O mapped I/O.
b) What is a DMA?

7. a) What is semaphore? How does it synchronize between tasks in multi tasking environmental for shared memory ?
b) What is meant by virtual memory? Explain this concept in 80286.

8. Write a short note on
       (a) Arithmetic Co-processor 8087.
       (b) Instruction set of 8087.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
LOW POWER VLSI DESIGN
[Digital Electronics and Communication Systems]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1.   a) Compare the standard VLSI design issues with the issues of low power VLSI design.
       b) Discuss about the limitations of low-voltage low-power VLSI design.

2.   a) Describe the total power consumption on CMOS Inverter.
       b) Draw and explain the working of two input NOR and NAND gates using BICMOS logic.

3.   a) Discuss about the properties of Fully depleted SOIMOSFETs.
       b) Draw the cross sectional view of a double polysilicon self aligned bipolar device and explain
          about its salient features.

4.   a) Draw and explain Bipolar device models and their limitations.
       b) Describe analytical and experimental characterization of sub-half micron MOS devices.

5.   With the help of relevant structures, explain the performance evaluation of conventional CMOS
       and BiCMOS logic gates.

6.   a) Discuss about low-voltage low power ESD-free BiCMOS logic circuit.
       b) Draw and explain the operation of low-voltage low-power CMOS digital circuit.

7.   a) Give the design considerations for low-power latches and flip-flops by taking into
          consideration of one from each logic circuit.
       b) Describe the evaluation of low-power latches and flip-flops and present their quality measures.

8.   Explain the following relevant to low-power VLSI special techniques.
               (a) CMOS Floating Node.
               (b) Delay Balancing.

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CODE No.:10MT10701

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
ADVANCED CONTROL SYSTEMS
[Electrical Power Systems]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1.   a) What is a PI controller? Derive expressions for K_p and K_i in time domain approach.
     b) Design a compensator using root locus method for a unity feedback system with open loop
        transfer function $G(s) = \frac{K}{s(s+3)(s+6)}$ such that the closed loop system has
        i)   Damping ratio 0.5
        ii) Magnitude of real part of complex pole ≤ 1
        iii) K_V at least 10.

2.   a) For an electrical lag compensator derive transfer function and expressions for maximum phase
        angle and frequency of maximum phase lag.
     b) Consider a unity feedback type - I system with open loop transfer function
        $G(s) = \frac{K}{s(s+1)(s+4)}$. The system is to be compensated to meet the following specifications
        using Bode plots; i) Velocity error constant, $K_V = 5$, ii) Peak over short, $M_P = 25\%$ and
        iii) Settling time, $T_S = 10$ sec.

3.   a) Derive the conditions for complete state controllability of continuous-time systems.
     b) Consider the system defined by
        $$\dot{x} = Ax\dot{x} = Ax$$
        $$y = Cx$$
        where   A=$\begin{bmatrix} 2 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 3 & 1 \end{bmatrix}$ and C=$\begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & 3 \end{bmatrix}$
        Check for complete observability of the system.

4.   a) Explain about jump resonance, limit cycles and frequency entertainment?
     b) Derive the describing function of a non-linear system with Dead zone and saturation
        non-linearity.

5.   a) Explain about the construction of Phase Trajectories by Isocline method.
     b) Draw the phase trajectory for the system $\ddot{x} + \dot{x} + x^2 = 0$ and discuss about its stability.

6.   a) Explain about the limit cycle behavior of nonlinear systems.
     b) Consider a nonlinear system described by the equations
        $$\dot{x}_1 = -3x_1 + x_2$$
        $$\dot{x}_2 = x_1 - x_2 - x_2^3$$
        Investigate the stability of equilibrium state using Kravovskii's method.

7.   a) Write about the necessary and sufficient conditions for arbitrary pole placement.

b) Consider the system defined by

$$\dot{x} = Ax + Bu$$

where $A = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -1 & 5 & -6 \end{bmatrix}$ and $B = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$

By using the state feedback control $u = -Kx$, it is desired to have the closed-loop poles at $s = -2 \pm j4$ and $s = -10$. Determine the state feedback gain matrix K using Ackermann's formula.

8. a) Explain the general formulation of optimal control problem

b) Test whether sufficient conditions for the existence of the asymptotically stable optimal control

solution for the plant

$$\dot{x} = \begin{bmatrix} 0 & 0 \\ 0 & 1 \end{bmatrix} x + \begin{bmatrix} 1 \\ 1 \end{bmatrix} U ; \text{ with the performance index } J = \int_0^\infty (x_1^2 + x^2) dt.$$

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
EHVAC TRANSMISSION
[Electrical Power Systems]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the expression for Inductance of a 2 conductor line.
   b) Calculate the GMR of a bundle conductor of a 1000 KV AC line whose sub conductors are 4.6 cm of diameter each. The number of sub conductors are 6 and sub conductor spacing is 55.2 cm.

2. Diagonalize the Inductance matrix of a transposed line

   $$[L] = \begin{bmatrix} L_S & L_m & L_m \\ L_m & L_S & L_m \\ L_m & L_m & L_S \end{bmatrix}$$

3. a) Write short notes on the effect of high electrostatic field on biological organisms and human beings.
   b) Derive the expression for maximum voltage gradient of N sub conductor bundle.

4. Derive the expressions for voltages induced in the un energized conductors of a 3 - phase double circuit line when one circuit is energized and the other is unenergized.

5. a) Explain about Static VAR compensation.
   b) Explain about No-load voltage and charging currents.

6. a) Define corona and write the formulae for corona loss
   b) Explain attenuation of traveling waves due to corona loss.

7. How will you measure the Audible noise? Explain in detail.

8. a) Explain the Design Factors of EHV lines Under Steady State.
   b) Explain the Electrical characteristics of EHV cable.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
MICROPROCESSORS AND MICROCONTROLLERS
[Electrical Power Systems]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the action taken by 8086 when INTR pin is activated.
   b) Write an assembly language program in 8086 to search the largest data in an array.

2. a) Explain the execution of the following instructions:
       (i) XCHG   (ii) STC   (iii) LEA
   b) What are assembler directives? Explain the use of assembler directives: SEGMENT, ENDS, EQU.

3. Interface four 8K chips of static RAM & two 4K chips of EPROM with 8086. Interface two of the RAM chips at 0000:0000H, so as to accommodate IVT in them. The remaining two RAM chips are to be interfaced at the end of 0005:0000H, two EPROM chips should be, interfaced 000A:0000, absolute decoding scheme.

4. a) Draw & Explain the block diagram of 8259 PIC.
   b) Write the initialization instruction for 8259 PIC for the following specifications:
      (i) Interrupt type 32 (ii) Edge triggered, single & ICW4 needed.

5. a) What are different architectural differences between 8086 and 80196? Explain.
   b) Write down salient features of Pentium and Pentium Pro processors.

6. Explain BSR & I/O mode word formats of the 8255 PPI. Write a BSR Control Word Subroutine to set bits PC7 & PC3 and reset them after 10 msec. Assume that a Delay Subroutine is available. Address for Control Word Register = 83H.

7. It is said that number of Timers/Counters one can have in 8051 is three. Is it true? Explain, when this is possible.

8. List SFRs required to program timers of 8051. What are the different modes of operations of these timers.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012

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) Obtain the classical model of one machine connected to an infinite bus.

2. Discuss the voltage regulator with one time lag of a Regulated Synchronous machine with a neat block diagram.

3. Obtain the state space model of one machine connected to an infinite bus.

4. a) Briefly explain the approximate model of the complete Exciter-Generator system.
    b) Write short notes on Lead compensation.

5. a) Explain the effect of excitation on generator power limits.
    b) Develop the state space description of the excitation system.

6. a) Derive the state space modal of a Type 1 continuously acting regulator and excitation system.
    b) Discuss the effect of Excitation on stability.

7. a) Explain the method of quadratic forms of constructing Lyapunov functions with suitable example.
    b) Explain the method based on first integrals of constructing Lyapunov functions for nonlinear systems with suitable example.

8. Explain and compare rotor angle and voltage stability with diagrams.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
REACTIVE POWER COMPENSATION AND MANAGEMENT
[Electrical Power Systems]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. (a) What is meant by a load compensator? What are its required specifications?
    (b) Explain how a load compensator is used for power factor correction in a power system?

2. (a) Explain the effects of various Parameters on the performance of uncompensated transmission line.
    (b) Discuss with neat sketch of passive shunt compensation effect on steady state reactive power compensation in transmission lines.

3. (a) Explain what is necessity to consider various characteristic time periods during the operation of a power system.
    (b) Describe the operation of a series capacitor during the different characteristic time periods.

4. (a) What are objectives of reactive power coordination?
    (b) Explain the consequences of over and under voltages in a power system.

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) Explain the benefits obtained in using tap changing transformer over a conventional transformer.
    (b) Discuss about the various methods adopted in distribution systems for loss reduction.

7. (a) What are the types of capacitors available in market and list out their characteristics and also the limitations.
    (b) Discuss the purpose of using capacitors in uses side for reactive power management.

8. (a) Draw the line diagram of filters in a plastic industry and explain about each component.
    (b) With the help of a neat diagram explain the basic operations in an electric arc furnace.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular Examinations April - 2012
POWER QUALITY
[Electrical Power Systems]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss briefly about various power quality issues.
    b) Differentiate between power quality and voltage quality.

2. a) Discuss the causes and effects of long interruptions.
    b) Compare observations with reliability evaluation.

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) What are the causes of voltage sag?
    b) Explain how voltage sag can be calculated in non-radial systems.

5. Explain the effect of voltage sag on (i) synchronous machines, (ii) computers and (iii) adjustable a.c. drive.

6. a) Discuss the role of shunt controller in mitigating the power quality disturbances.
    b) Describe the procedure to install mitigation equipment.

7. a) How harmonics are generated from commercial loads.
    b) Explain interharmonics.

8. a) Explain how interruptions can be mitigated using voltage source converters.
    b) What are the precautions to be taken while installing mitigation equipment?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
ADVANCED DATA STRUCTURES AND ALGORITHMS
[Software Engineering]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Write recursive, non-recursive functions to find an element in a singly linked list and compare their complexities
   b) Write the algorithms to insert and delete element in a Circular Queue?

2. a) Compare the polynomial and exponential algorithms.
   b) Discuss in detail about asymptotic notations and explain with suitable examples and how the time complexity of an algorithm can be expressed using asymptotic notation.

3. a) Write an algorithm that counts the number of nodes and number of leaves in a binary tree.
   b) Write the LIFO insertion algorithm to general trees.

4. a) Explain the AVL trees and explain where AVL Trees can be useful
   b) Write the routine to create a red-black tree?

5. a) Explain various operations on Splay tree.
   b) What is B-tree? What are the time complexities of insertion, deletion operation on B-tree? Construct a B-tree of order 3 for following elements: 25,10,20,30,35,80,40,50,60, 82,70,90,85,93.

6. a) Apply quick sort algorithm to sort the list E,X,A,M,P,L,E in alphabetical order. Draw the tree of the recursive calls made.
   b) By considering the complete graph with n vertices, show that the number of spanning trees in an n-vertex graph can be greater than $2^{n-1} - 2$.

7. a) Write the control abstraction of Dynamic Programming.
   b) State and explain 0/1 knapsack problem using Dynamic Programming with an example.

8. a) Discuss in detail about n-queen problem. Write a back tracking algorithm for this problem and state the number of nodes in the state space tree in case n=8.
   b) Explain the general method of Branch and Bound.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
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) How does a process model differ from one another?
   b) What framework activities are used during Personal software Process?
   c) How are unit tests used in XP?

3. a) Define the following terms:
         i) Software availability and   ii) Software Reliability
   b) Explain the meaning of system specification?

4. a) What is software reuse? Write short notes on generator based reuse.
   b) What is a reusable component? Under what environmental conditions (software/hardware)
       these components can be reused?

5. a) What is regression testing? Why is it necessary to do regression testing?
   b) List various factors used in environment assessment and application assessment.

6. Explain the following terms:
         a. Service Oriented architecture.
         b. Service Oriented Software Engineering.

7. a) Compare the key characteristics of the ISO 9000 certification with those of the SEI CMM
       model for quality appraisal.
   b) What do you understand by software quality management? What are the various means to
       check the quality of software?

8. Enumerate the golden rules of User Interface Design?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
MIDDLEWARE TECHNOLOGIES
[Software Engineering]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. (a) Explain the building blocks of client/server computing.
    (b) Discuss aspects of client/server systems.

2. (a) Explain direct and indirect interfaces.
    (b) What are the different forms of design levels?

3. Briefly explain Component Architecture and Component Framework.

4. Discuss DCOM and XML Technologies.

5. (a) Describe interoperability services in .NET framework.
    (b) Give a note on fundamental namespaces.

6. With an example, explain how you connect to a database, query the database and display the results of a query using ADO.NET

7. Discuss and explain different EJB deployment classes with their methods. Write an overview on the EJB architecture.

8. (a) Discuss why system object model has become obsolete.
    (b) Explain the evolution of object request broker services.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
SOFTWARE METRICS
[Software Engineering]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) What is measurement? Explain the objectives for software measurement.
    b) Give brief description about capability maturity assessment.

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) Distinguish between validation and verification.
    b) Write short notes on cost and effort estimation?

4. a) Explain when a data is called a Good Data?
    b) With an example explain various fields of fault report in detail?

5. a) Explain various aspects of software size?
    b) "The complexity of the solution is no greater than the complexity of the problem, but that is not always the case", Justify.

6. a) What are the different measures suggested by Chidamber and Kemerer for object oriented systems? Explain.
    b) Differentiate between coupling and cohesion.

7. a) Draw and explain the McCall software quality model.
    b) Explain the different usability measures.

8. a) Explain capability maturity model in detail.
    b) Draw and explain the architecture of SPICE for process assessment.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
SOFTWARE REQUIREMENTS AND ESTIMATION
[Software Engineering]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain briefly about the software requirements and risk management?

2. a) Describe and Illustrate the analysis models in Software Requirements Engineering?
   b) Explain the risk reduction through prototyping in Requirements Engineering?

3. a) Discuss in brief about the Requirement Attributes?
   b) Explain the Change-Control Process and Change-Control Policy?

4. a) What are the estimation methods? Discuss in detail?
   b) Explain the problems associated with the estimation?

5. Explain The following with appropriate examples.
   - Quick FPA count.
   - Rapid Application Portfolio Sizing.
   - NESMA Estimated and Inductive FP.

6. Explain the COCOMO II model in brief?

7. What are the benefits of using a requirements management tool and explain how it will be used for managing the requirements for a system like ***e-tenders.***

8. Illustrate and Explain the SLIM Tools?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
VIRTUALIZATION AND CLOUD COMPUTING
[Software Engineering]

Time: 3 hours   Max Marks: 60
Answer any FIVE questions
All questions carry equal marks

1. a) What is Virtualization? Explain the different forms of Virtualization?
    b) Explain the role of Virtualization in Cloud Computing?

2. Explain how virtualisation impacts the following:
    a)   Parallel computing
    b)   Grid computing
    c)   Cloud computing
    Illustrate your answer with examples.

3. Describe the details of building cloud applications using Intel virtualization methods.

4. Describe the relationship between resource and service. Explain how to define a resource and service in cloud computing?

5. Describe the components of Cloud Computing?

6. Describe Cloud Computing Architecture?

7. Describe disaster management and planning using clouds? Present a case study using any cloud technology.

8. IBM Clouds?

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CODE No.:10MT15701

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
ANALOG IC DESIGN
[VLSI]

Time: 3 hours   **Max Marks: 60**
Answer any FIVE questions
All questions carry equal marks

1. Draw and explain the small signal model of the NMOS taking body effect into consideration.

2. a) Assume all transistor have W/L = 100um/1.6um and that $\mu_n C_{ox} = 90\mu A/V^2$, $\mu_p C_{ox} = 30\mu A/V^2$, $I_{bias} = 75\mu A$, $r_{ds-n} (\Omega) = 8000L (\mu m) / I_D (mA)$, $r_{ds-p} (\Omega) = 12000L (\mu m) / I_D (mA)$, What is the gain of the common source amplifier shown in figure .1
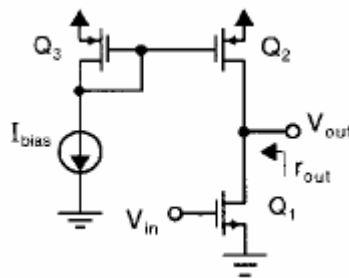
Figure.1
    b) Derive the common drain amplifier gain using small signal model.

3. a) State the limitations of single stage amplifiers.
    b) Explain in detail the design and operation of Wilson current mirror.

4. a) Explain about latched comparator.
    b) Explain how the gain is improved in folded cascade operational amplifier.

5. a) Explain the operation of the Biquard Filters.
    b) What are the merits of Bi-CMOS Sample and Hold Circuits.

6. Consider a 3-bit D/A converter in which V_{ref} = 4 V with the following measured voltage values
    { 0.011 : 0.507 : 1.002 : 1.501: 1.996: 2.495: 2.996: 3.491}
        a) Find the offset and gain errors in units of LSBs.
        b) Find INL and DNL errors
        c) Find the effective number of bits of absolute accuracy.
        d) Find the effective number of bits of relative accuracy.

7. a) Define the resolution, settling time and conversion time of D/A converters.
    b) Explain briefly a 4 bit flash A/D converter. State the salient issues in designing flash A/D converters.

8. a) Show that the dynamic range can be increased by over sampling.
    b) Discuss the stability and linearity issues associated with delta sigma converters.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
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) What is Hardware Encapsulation and explain how Verilog provides it?
    b) Explain about Hardware modeling with an example?

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) Explain about Intra assignment delay with an example?
    b) What are various systems tasks for timing control?

4. a) Draw and explain Test bench for post-Synthesis design verification.
    b) What are the benefits of synthesis explain in detail.

5. a) With suitable example explain the synthesis of the following language constructs.
                i) Case statement
                ii) Fork join block
    b) Explain about the synthesis of compiler directives?

6. a) Write the switch level description for a 3-input static CMOS NOR gate and explain?
    b) Write the switch level description for a half adder implemented using Transmission gates.

7. a) Explain about the HDL Design flow with an example?
    b) Write VHDL code that converts a given BCD into Excess-3 code?

8. a) Explain about process statement and assert statement with an example.
    b) Difference between VHDL and Verilog.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
DIGITAL IC DESIGN
[VLSI]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1.   a) Calculate the switching threshold for a CMOS inverter operating at V_{dd} = 3.3 V with V_{tn}=0.75V, V_{tp}= -0.75V and $\beta_n = \beta_p$. Also discuss the change in the switching threshold for the cases
       (i) $\beta_n > \beta_p$
       (ii) $\beta_n < \beta_p$
Compared to $\beta_n = \beta_p$ Case.
b) Explain the Dynamic characteristics of CMOS inverter.

2.   a) Compare parallel and pipelined processing approaches.
b) Explain various methods used for reducing switching activity.

3.   a) Draw the block schematic of a typical low power chip and explain each block in detail.
b) Explain various techniques used for reducing switched capacitances.

4.   a) Implement a 3-bit Multiplier using Complementary static CMOS
b) Explain possible ways of reducing static and dynamic dissipation in CMOS design.

5.   a) Explain the static behavior of a BiCMOS inverter.
b) Let Z = (ABCDE+FGH)'. Realize a BiCMOS and Domino CMOS implementation of the Boolean function Z.

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 design rules for
       (i)   Contacts.
       (ii)   Stacked Vias
       (iii)   N-well.
b) Explain about the Mead Conway Design rules for NMOS process.

8.   a) Explain the design of a 4-bit arithmetic processor.
b) Explain modified Booth's algorithm and give its implementation.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
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. How are define the objective function and closeness function for HW/SW partitioning ? Give example for each.

3. a) What are the various prototyping and emulation techniques and explain their importance.
   b) What are the prototyping and emulation environments are available and explain their importance.

4. Explain the target architecture for data-dominated systems.

5. a) With neat sketch explain any one of the modern embedded processor architecture.
   b) Write notes on embedded software development needs with an example.

6. a) What is meant by concurrency? Explain how to coordinating concurrent computations during the process of hardware software co-design.
   b) What are the verification tools required for an embedded system design? Write short notes on interface verification.

7. a) Present the design representation for system level synthesis.
   b) What are the system level specification languages and explain the design approach with any one of the language.

8. Explain how the heterogeneous embedded system is modeled and co-simulation in the Lycos system.

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CODE No.:10MT15705

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
VLSI TECHNOLOGY
[VLSI]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the cross-sectional view of n-well CMOS inverter?
   b) What is Bi-CMOS technology? What are the additional process steps apart from CMOS?

2. a) Derive the pull-up to pull-down ratio for NMOS inverter?
   b) Draw the circuit diagram of BiCMOS Inverter?

3. a) What are different contact cuts and explain?
   b) What do you understand by scalable design rules related to CMOS technology?

4. How long wires are represented in terms of distributed RC effect and derive the delay equation.

5. a) Why transistor sizing is important for the performance of a circuit? Explain with an adder carry chain example?
   b) How do you test a logic gate? Explain?

6. a) Draw the FSM of a 01-string recognizer?
   b) Explain in brief sequential testing?

7. a) Explain the use of shape function in Floor planning sizing?
   b) Represent the Floor plan of given figure as a Slicing tree and Explain.

8. a) What is retiming? What are its uses?
   b) Describe the ASAP scheduling algorithm and role of it in high level synthesis.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Regular/Supplementary Examinations April - 2012
ASIC DESIGN
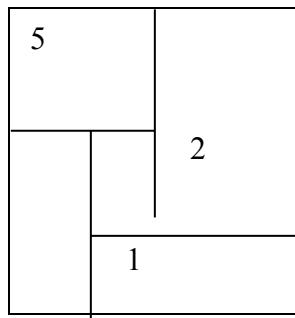### [VLSI]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is an ASIC? Explain different types of ASICs.
    b) Write short notes on PLDs.

2. a) Name any two FPGA families from two different FPGA vendors and compare the two FPGA families in various aspects like the architectures, programming methods and performances.
    b) Explain in detail about the programmable logic array and programmable array logics.

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) What are the desirable characteristics of ASICs? Compare the performance of gate array ASICs, standard cell based ASICs and mixed-mode ASICs
    b) Explain the gate-array based ASICs.

5. a) Describe the priority encoder, D flip-flop using VHDL.
    b) Discuss in detail FPGA design approach using Altera FPGA design tool.

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) What are the goals and objectives of the system partitioning?
    b) Explain any one type of partitioning algorithm.

8. a) Explain the system partitioning mechanism for FPGA design flow?
    b) Explain the physical design flow?

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CODE No.:10MT16102

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Supplementary Examinations September - 2012
MODERN DIGITAL COMMUNICATION TECHNIQUES
[Communication Systems]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Define impulse response of a continuous time function.
    b) Explain the optima filtering like wiener filter and narrow band Gaussian noise.

2. a) Suppose that a set of M signal waveforms $[(S)]\downarrow(i, m)(t)\}$ are complex valued. Give the equations for the Gram-Schmidt procedure that will result in a set of $N \leq M$ ortho-normal signal waveforms. Draw the suitable sketches.
    b) Give the expressions for band pass signals and low pass equivalent of band pass signals.

3. a) Explain the operation of OQPSK modulation scheme with suitable diagrams.
    b) Use NRZ bipolar scheme to draw various signal waveforms of QPSK modulation scheme for the data sequence of 10001110.

4. a) Derive the expression for probability of error in case of DPSK. Compare its performance with that of BPSK and list out important conclusions.
    b) A matched filter is employed to decode a binary PSK sequence being received at a rate of 10kbps. The signals are received in the presence of AWGN having one sided spectral density of 10^{-6} W/Hz. What average power is required to achieve error probability of 10^{-6}?

5. Explain the concept of
    a) Fractionally spaced equalizer.
    b) Linear traversal filter.

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. Give the procedure to generate OVSF codes of length 16 and verify its important properties. Plot auto correlation function of one sixteen length OVSF code.

8. a) Analyse the concept of auto correlation function and tracking error signal for DDL.
    b) What is the application for matched filter for Pn sequences?

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CODE No.:10MT16105

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Supplementary Examinations September - 2012
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) A Gaussian channel has a 1-MHz bandwidth. If the signal-power-to-noise power spectral
      density $S/\eta=10^5$ Hz, calculate the channel capacity C and maximum information transfer
      rate R.
    b) Plot channel capacity C versus B, with S/η = constant, for the Gaussian channel.

3. a) Discuss briefly the importance of source coding and channel coding techniques in
      communication systems.
    b) Explain briefly error detection and error correction capabilities of linear block codes?

4. a) A parity-check code has the parity-check matrix $H = \begin{bmatrix} 101100 \\ 011010 \\ 110001 \end{bmatrix}$

      i)   Determine the generator matrix G.
      ii) Find the code word that begins 101….
      iii) Suppose that the received word is 100011. Decode this received word.
    b) Design a linear block code with minimum distance of three and a message block size
      of eight bits.

5. a) Construct the standard array for an (n, k) linear block code. Discuss briefly decoding
      operation using the standard array.
    b) Design a single-error-correcting code with a message block size = 11 and show by an
      example that the code can correct single errors.

6. Write short notes on:
    a) Reed-solomon codes, b) Turbo codes and   c) Concatenated codes.

7. a) Determine the generator polynomial of the primitive BCH codes of length 31.
      Use the Galois filed GH (2^5) generator by $P(x) = 1 + x^2 + x^5$.
    b) Device a syndrome computation circuit for the binary double error correcting
      (31, 21) BCH code.

8. a) Explain the Viterbi's decoding algorithm.
    b) Encode channel with Reed-Solmon code for given message 010110111.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Supplementary Examinations September - 2012
DETECTION AND ESTIMATION OF SIGNALS
[Communication Systems]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) With an example, explain about probability of error criterion.
   b) Discuss about min - max criterion with an example.

2. a) Draw and explain the block diagram of integrating optimum receiver.
   b) Explain the importance of signal space diagram with suitable example.

3. a) Discuss in detail about matched filter receiver.
   b) Discuss about waveform observation in additive Gaussian noise.

4. a) Discuss about the following:
   i) Uniform cost function.
   ii) Absolute value cost function.
   b) With an example, discuss about non - linear estimation.

5. a) Discuss about the following:
   i) Uniform cost function.
   ii) Absolute value cost function.
   b) With an example, discuss about least squares method.

6. Prove that any estimate exists that meets Cramer-Rao bound, it will be equal to the Maximum Likelihood estimation.

7. Consider the message and observation models for the system
   $x(t) = - x(t) + w (t)$
   $z(t) = A \, cos[w_0 t + 0.5x(t)] + v(t)$
   The input w(t) is zero mean, white, with unity variance as is the observation noise v(t). obtain the linearized Kalaman filter algorithm for this problem.

8. Discuss about exponential families of maximum likelihood estimation.

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CODE No.:10MT13803

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Supplementary Examinations September - 2012
### DIGITAL SYSTEM DESIGN
[Digital Electronics and Communication Systems]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Draw an ASM chart of Master slave JK flip flop and explain.
    b) Design a sequence detector by drawing ASM chart for detecting 0000 and 1111 sequences.
       Implement the design using MUXs and decoders .

2. a) Design a full adder circuit and implement in a PLA.
    b) Differentiate between CPLD and FPGA . Draw the internal structure of a CPLD.

3. a) Apply path sensitization technique to detect SA1 fault on h for the given circuit.
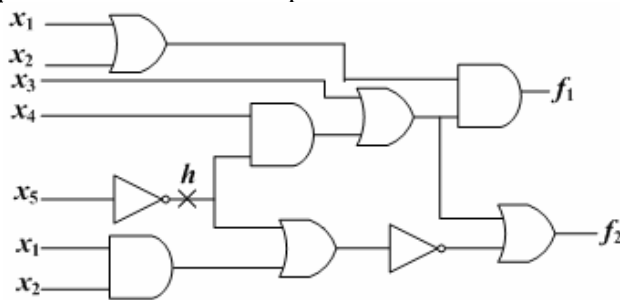
     b) Explain Kohavi's algorithm with an example.

4. a) Explain Random testing method in detail.
    b) Generate a test vector to detect G2 output S_a_0 in the circuit given using D- algorithm
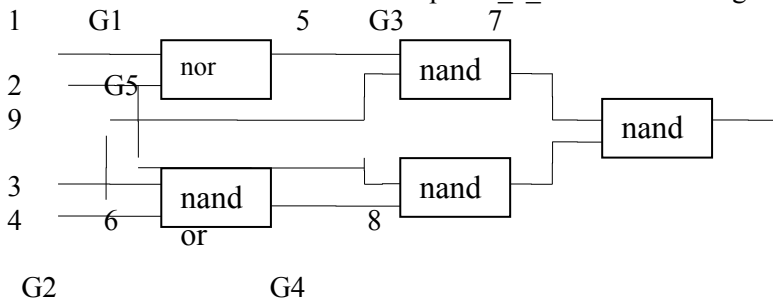
5. a) Explain in brief the steps involved in diagnosing a sequential machine.
    b) Consider the following state table of a machine M, construct an entire preset checking experiment.

P.S	N.S. , Z	
	X=0	X=1
A	B,0	A,1
B	C,0	A,1
C	A,1	B,0

6. a) State and explain Essential Prime Cube theorem with an example.
    b) Tabulate the PLA programming table for the four boolean functions.
       $A(x,y,z)=\sum(1,2,4,6)$,$B(x,y,z)=\sum(0,1,6,7)$,$C(x,y,z)=\sum(2,6)$, $D(x,y,z)=\sum(1,2,3,5.7)$.

7. Explain in detail the fault model of PLA and test generation, with an example.

8. a) Define Races, Hazards and cycles.
    b) Show a primitive and reduced flow table for the circuit specified by " Z=1 if both
       x1 = x2 = 1, but only if x1 becomes 1 before x2" .

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Supplementary Examinations September - 2012
LOW POWER VLSI DESIGN
[Digital Electronics and Communication Systems]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) What are the implications of Device Technology on IC design? Explain.
    b) Discuss about the various problems associated with low voltage VLSI circuit design? Explain.

2. a) Describe the total power consumption on CMOS Inverter.
    b) Draw and explain the working of two input NOR and NAND gates using BICMOS logic.

3. Draw the structure of poly silicon Emitter high performance BICMOS structure and explain the same. Give the process flow for the same.

4. a) Draw and explain an advanced MOSFET model and its limitations.
    b) Describe MOSFET device behavior in a hybrid mode environment.

5. Draw the circuit for common-Emitter Bi CMOS driver configuration and explain its characteristics.

6. a) List the advanced BiCMOS digital circuits that are required for low-voltage low-power VLSI
       design. Explain any one of them with its operation.
    b) Discuss about ESD-free BiCMOS logic circuit and give the comparative evaluation of low-voltage low-power logic circuits.

7. Explain all the important design factors which impact on transistor performance and reliability ?

8. Explain the following relevant to low-power VLSI special techniques.
        (a) Low Power Bus.
        (b) Low Power Techniques for SRAM.

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CODE No.:10MT10703

SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech I Semester (SVEC10) Supplementary Examinations September - 2012
MICROPROCESSORS AND MICROCONTROLLERS
[Electrical Power Systems]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) How 8086 Access a byte or word from Even & odd memory banks? Explain by Giving examples.
   b) Explain the flag register of 8086/8088.

2. a) What are different control transfer group of instructions of Intel 8086 microprocessor. Give an example to each.
   b) What is a macro? How to declare an assembly program as a macro? What is the use of Macros? Explian.

3. Explain the importance & functioning of
   (a) ALE pin   (b) MOV AX, 004CH INT 21 H   (c) MOV AX,@ DATA MOV DS, AX
   (d) Min/Maxi pin. (e) DT/R   (f) INTR (g) RESET   (h) TEST.

4. a) Design 8086 based system with the following specification
   (i) 8086 in mini mode   (ii) 64 KB EPROM   (iii)   64 KB RAM
   b) Draw complete schematic of design indicating add. map.

5. a) What are different architectural differences between 8086 and 80196? Explain
   b) Write down salient features of Pentium and Pentium Pro processors.

6. a) Explain following addressing modes of Intel 8051 micro controller:
      (i)   Register indirect with displacement
      (ii) Direct memory addressing
   b) Explain different ways of organizing memory in Intel 8051 and also 8051 with external memory.

7. Discuss in detail about 8051 based stepper motor control along with necessary hardware and software.

8. a) What is the power saving modes in 8051?
   b) Discuss the interrupt structure in 8051.

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CODE No.:10MT15702

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech I Semester (SVEC10) Supplementary Examinations September - 2012
DIGITAL DESIGN MODELING AND SYNTHESIS WITH HDLS
[VLSI]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1.   a) Explain about Hardware encapsulation and give an example.
     b) Discuss about behavioral description of full adder in Verilog?

2.   a) Develop and verify the circuit using a non-exhausting test bench to gain a high level of
        confidence in the functionality of your design. Carefully select a small but robust set of test
        vectors. Discuss your testing strategy.
     b) How does Verilog support hierarchal de-refreshing?

3.   a) Explain the difference between blocking and non blocking   procedural assignments with an
         example.
     b) What are the various system tasks in Verilog and explain?

4.   a) Explain the synthesis of gated clocks with an example.
     b) Design a sequence detector to detect the string "01" in the incoming message stream.
        Implement a behavioral description for it.

5.   a) With suitable example explain the synthesis of the following language constructs.
                       i) Case statement
                       ii) Fork join block
     b) Explain about the synthesis of compiler directives.

6.   a) Implement 4X1 MUX using Transmission Logic gate and write and verify a switch level
        model.
     b) Write a test bench and verify the master and slave D-Flip-Flop.

7.   a) What is the difference between HDL and C language. Develop a VHDL code in behavioral
        model for 3 input XOR gate.
     b) Draw and explain Place and Rout concept.

8.   a) Explain about process statement and assert statement with an example.
     b) Differentiate between VHDL and Verilog.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
BIOREACTOR ENGINEERING
[Bio-Technology]

Time: 3 hours   Max Marks: 60
Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the different modes of bioreactor operation.
    b) What is endogenous metabolism and explain its significance.

2. Explain in detail the types of air-lift bioreactor with neat schematic diagrams.

3. a) Discuss the oxygen transfer methodology in bioreactors with a neat diagram.
    b) Azotobacter vinelandii is cultured in a 15 m^3 stirred fermenter for alginate production. Under current operating conditions kLa is 0.17 s^{-1}. Oxygen solubility in the broth is approximately 8 x 10 -3 kg m^{-3}.
       (i) The specific rate of oxygen uptake is 12.5 mmol g^{-1} h^{-1}.What is the maximum possible cell concentration?
       (ii) The bacteria suffer growth inhibition after copper sulphate is accidently added to the fermentation broth. This causes a reduction in oxygen uptake rate to 3 mmol g^{-1} h^{-1}. What maximum cell concentration can now be supported by the fermenter?

4. a) Derive the equation to estimate the conversion using the dispersion model.
    b) Explain the reasons for non-ideality in bioreactors with schematic diagrams.

5. a) Elaborate and discuss the mass transfer in agitated tanks.
    b) Discuss the power number of Newtonian and non-Newtonian fluids in agitated tanks.

6. a) Discuss the various methods of minimizing the cell damage in bioreactors.
    b) Discuss the effect of laminar and turbulent flow on animal and plant cells in bioreactors.

7. Explain in detail the monitoring and control of bioreactors with required flow diagrams.

8. What are the different methods available to scale up the bioreactors? Explain.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012

GENETIC ENGINEERING

[Bio-Technology]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain the guidelines to be followed while carryout research works in genetic engineering.

2. What are molecular markers? Explain their applications.

3. What is genetic engineering and describe its applications in medicine and agriculture.

4. What are artificial chromosomes? How are they constructed? Explain their uses.

5. Name different techniques for studying protein-protein interactions. Describe about yeast two-hybrid system.

6. Write notes on RNase protection assay.

7. Write notes on the following.
   a) Codon optimization.
   b) Purification of recombinant proteins.

8. Write short notes on any two of the following.
   a) Gene editing
   b) Transposons
   c) Phage display

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
BIOSEPARATION PROCESSES
[Bio-Technology]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. what are the various unit operations involved in upstream processing of a bioprocess ? Explain each process.

2. Discuss different methods of cell disruption and explain about bead mill with a neat diagram.

3. Write short notes on:
    a) Constant volume filtration.
    b) Basket centrifuge.
    c) Ultra filtration.

4. What is the efficiency of Evaporator? Explain multiple effect of evaporator.

5. Describe about basic principle of membrane separation.and explain about membrane characteristics.

6. Write short notes on :
    a) Affinity chromatography.
    b) Philpot Electrophoresis.
    c) Ion- exchange chromatography.

7. Define chromatography. Give a brief account on Electrophoresis.

8. Describe freeze drying techniques in detail.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012

CELL TECHNOLOGY

[Bio-Technology]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions

All questions carry equal marks

1. Write detailed note on types of tissue cultures.

2. What are the different possible contaminants in cell and tissue culture experiments? How are they detected and eliminated if contamination occurs?

3. Write a note on:
   a) Chemical properties of culture medium.
   b) Protein-free medium.

4. a) What is primary culture? Explain the isolation of chick embryos in a stepwise manner.
   b) What is the use of trypsin in cell culture? Why cold trypsin is not used in experiments?
   c) What is transformation and immortalization? Write two differences between them.
   d) What is telomerase-induced immortalization?

5. What are complementary cells? Enumerate on the cytotoxicity assays of a cultured cell.

6. What are the different phases in cell growth? Explain growth curve? How do you characterize the different phases of growth cycle?

7. Explain the significance of somatic cell genetics.

8. Explain the techniques of isolation of pure clones.

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CODE No.:10MT20305

SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
BIOINFORMATICS
[Bio-Technology]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What is Bioinformatics? Why do people consider it is an interdisciplinary subject? Explain.

2. Write short notes on
   a) Restriction mapping.
   b) ORF analysis.

3. Define Small nuclear RNA, Write their importance and applications in DNA or protein sequence alignments.

4. Differentiate PAM & BLOSUM. How they are generated? Briefly state the source of error in PAM model.

5. Write an account on protein sequence analysis with reference to isoelectric point, extinction coefficient. Add a note on Kyte and Doolittle scale for of 1^0 protein sequence.

6. What is energy minimization? Explain different types?

7. Describe the whole genome sequence data analysis. Add a note on assessment of data quality, types of misassemblies.

8. Explain briefly drug discovery tools, and their applications. Specify MoE and Accelyrs suite.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012

ADVANCED IMMUNOTECHNOLOGY

[Bio-Technology]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain how recombinant antibodies are produced.

2. Explain the functions lymphocyte subsets Th1, Th2 and Th17.

3. Distinguish between the following:
   a) Central memory and peripheral memory
   b) T-Cell and B-Cell
   Bring out the relationship among immunological memory, vaccine and infection.

4. Why do adjuvants used in immunization experiments? Describe the mechanism of the action of adjuvants.

5. What are monoclonal antibodies? Describe the procedure. Mention their applications.

6. How does a tumor cell differ from a normal healthy cell? What are tumor antigens? Indicate the role of NK cells in combating tumor cells.

7. What is hybridoma technology? Explain its procedure and application.

8. Write an account on.
   a) Immunoelectrophoresis.
   b) Immunomodulators.
   c) Immunoflorescence.

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CODE No.:10MT23807

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech II Semester (SVEC10) Regular Examinations September - 2012
IMAGE PROCESSING
[Communication Systems]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Write about two dimensional DCT with an example.
    b) Discuss in detail about KL transform with an example.

2. a) Why image filtering is done in the frequency domain?
    b) What is spatial filtering? Why are smoothing spatial filterers used?

3. a) Explain the concept of Inverse Filtering? Explain the Wiener Filter construction.
    b) Write short notes on circulant and block-circulant matrices.

4. Discuss about region growing with respect to image segmentation. What is edge detection? Discuss the various methods for edge detection.

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. Write short notes on Image compression standards.

7. Write short notes on representation of digital video and discuss on motion estimation.

8. Explain the various methods for Video coding standards.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech II Semester (SVEC10) Regular Examinations September - 2012
DIGITAL SATELLITE COMMUNICATIONS
[Communication Systems]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Explain DAMA Characteristics.
   b) Explain Real-Time Frame Reconfiguration.

2. a) Write short notes on Slotted ALOHA.
   b) Define the M/G/I Queue and Message Transmission by TDMA pure ALOHA.

3. a) Illustrate the principle of operation of MPSK with block diagram, explain its performance in presence of noise?
   b) What is the significance of PLL in carrier recovery explain?

4. a) What is sequence synchronous and asynchronous DS-CDMA, derive the expression for probability of bit error?
   b) Explain the modulation and demodulation function of a DS-SPREAD spectrum system?

5. a) Explain the error control strategies of VSAT?
   b) Why has TDMA approach has been adopted for most down link applications for digital VSAT and internet applications to small terminals?

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) What are delay and throughput considerations ,Explain?
   b) What is the difference between total coverage and instantaneous coverage fro satellite antenna illuminating the earth surface?

8. a) Design DBS-TV Link Budget?
   b) Write Short Notes on C-Band and Ku-Band?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular Examinations September - 2012
RF SYSTEMS AND CIRCUITS
[Communication Systems]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) List out the application of transmission lines.
    b) Draw an equivalent circuit of a two wire transmission line
    c) A lossy cable which has R=2.25Ω/m, L=1.0µH/m, C=1pF/m and G=0 operates at f= 0.5GHz. Find out the attenuation constant of the line.

2. a) Explain the operation of a 4-port directional coupler.
    b) How a 4-port coupler can be used as a 3-port coupler.

3. a) Discuss about single and double stub matching
    b) A load of (50-j100) Ω is connected across a 50 Ω line. Design a short circuited stub in order to provide impedance matching between the two at a signal frequency of 30 MHZ.

4. a) Compare and contrast single stub matching technique with double matching one.
    b) Explain attenuation loss & characteristic impedance of parallel strip line.

5. a) What is dielectric phase shifter?
    b) Explain the working of PIN diode.

6. a) What is High impedance low pass filter?
    b) What are MIC filters?

7. a) Explain MEMS fabrication process.
    b) What are the advantages of MIC, MMIC, MEMS technologies?

8. a) Explain working of balanced demodulator.
    b) Explain detector peak clipping, negative clipping problem of AM detector.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech II Semester (SVEC10) Regular Examinations September - 2012
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) Describe RSA public key encryption technique.
    b) Consider the following data:
       $n = 527$; f(n) = 480; $d = 343$; C = 128. Decrypt the cipher text C.

2. a) What are the different types of security threats? Distinguish between passive
       and active attacks. Give examples.
    b) Compare and contrast various public key cryptosystems.

3. With neat diagrams explain various modes of DES algorithm.

4. Write note on the following:
       a) Chosen-plain text attack
       b) The birthday attack
       c) Semantic security
       d) One way hash functions

5. Describe in detail DES block cipher algorithm.

6. Describe the following:
       a) Probabilistic Public Key encryption
       b) Random bit sequences

7. Explain the following:
       a) Trap door predicates
       b) Fiestel network
       c) S-Boxes
       d) CBC MACs

8. With a neat diagram describe HMAC algorithm to generate MAC.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech II Semester (SVEC10) Regular Examinations September - 2012
INTRUSION DETECTION SYSTEMS
[Computer Networks and Information Security]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is a security process? Discuss about the steps involved in the security process?
    b) What do you mean by Network Security Monitoring? Discuss about the principles of NSM?

2. a) List the different methods for the intrusion detection in networking.
    b) Illustrate, the MD5 message digest algorithm, with its logic and compression function with relevant examples.

3. What is forward proxy and reverse forward proxy? Discuss about their deployment and operation with a suitable diagram.

4. a) What are the functions of network forensics analysis tools? List various tools available for network forensics.
    b) Briefly discuss about exploitation and propagation of bots.

5. a) Write short notes on intrusion detection with an example.
    b) Mention the procedures involved in quantitative risk management?
        [Example: How is detention detection systems]

6. Explain the OSI security architecture along with their services available in detail with a neat diagram.

7. a) List some of typical locations for deploying in-line IPS.
    b) What are benefits and limitations of Network Intrusion Prevention systems?

8. Discuss about the capabilities of CSA and architecture of CSA management.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC10) Regular Examinations September - 2012
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 the difference between autocorrelation and cross correlation.
   b) What is a Denial-Of-Service attack (DOS attack)? Explain it by
      providing suitable example.

2. a) Explain in brief about IP Security Architecture.
   b) What are the key differences between first and second generation cellular system?

3. a) In what ways has traditional cordless telephony been extended by standardization?
   b) Discuss in detail the monitoring traffic using packet of firewall.

4. a) Why CSMA/CA with RTS and CTS explain?
   b) Explain channel allocation in one-dimensional systems?

5. a) A cellular system uses FDMA with a spectrum allocation of 12.5 MHz in each
      direction, a guard band at the edge of the allocated spectrum of 10 kHz,
      and a channel bandwidth of 30 kHz. What is the number of available channels?
   b) Briefly explain Diffie Helman key exchange algorithm. Find the key if q=71, a=7.

6. a) Explain features of IPV6?
   b) How is transition from IPV4 to IPV6 done?

7. a) Why is routing needed and how is it classified?
   b) Explain   (i) Location aided routing   (ii) Dynamic source routing?

8. a) Write in detail about IEEE.802.11 standards.
   b) Explain in detail about content inspection.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012

COMPUTER NETWORKS

[Computer Science]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Make a comparison of OSI reference model and TCP/IP reference model.
   b) When is the queuing delay large and when is it insignificant?

2. Briefly explain the following:
   i) Role of SNMP and MIB
   ii) Advantages of IMAP over POP3

3. Change the following IP addresses from binary notation to dotted decimal notation and identify the address class.
a.	01111111	11110000	01100111	11111001
b.	10101111	11000111	11111000	00011101
c.	11011111	10110000	00011111	01011101
d.	11100000	11110111	11000111	011111101

4. a) Discuss the services offered by transport layer to the upper layers.
   b) Explain how TCP uses congestion control to alleviate congestion in the network.

5. a) Show the entries for the header of a TCP segment that carries a message from a FTP client to a FTP server. Fill the checksum field with 0s. Choose an appropriate ephemeral port number and the correct well-known port number. The length of data is 40 bytes.
   b) Suggest the solutions for the silly window syndrome created at both the sending and receiving TCP.

6. a) A DNS client is looking for the IP address of **svec.ac.in.** Show the query message with values for each field.
   b) Briefly explain the different types of IGMP messages.

7. Define ARQ protocol and explain stop and wait ARQ protocol with all possibilities.

8. a) Write notes on overlays networks.
   b) Explain Real-time media transport protocols.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
DATA WAREHOUSING AND DATA MINING
[Computer Science]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about Data mining Primitives.
    b) Briefly discuss the data warehouse applications.

2. Explain various methods of Data Reduction.

3. a) Distinguish OLTP and OLAP.
    b) Explain the various forms of schema for a multidimensional model with example.

4. Discuss the approaches for mining multi level association rules from the transactional databases.
    Give relevant example.

5. a) Define classification. Explain k-nearest neighbor classifier method of classification.
    b) How can data samples be classified by decision tree induction method? Explain.

6. a) Explain the categories of major clustering methods.
    b) Write algorithms for K-means and K-medoids.

7. a) How alignment of biological sequence is done?
    b) What is Markov chain?

8. a) Write short notes on
                i. Keyword based association analysis
                ii.   Document classification analysis
                iii.   Document clustering analysis
    b) What are the basic measures of text retrieval?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012

JAVA AND WEB TECHNOLOGIES

[Computer Science]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions

All questions carry equal marks

1. a) Write short notes on the following:
      i) Classes   ii) Objects   iii) Abstract classes
   b) Explain the thread life cycle in detail.

2. a) What is an applet? Explain about AWT programming.
   b) Describe about handling swing controls with examples.

3. a) What is scripting language? Write code for factorial of a given number using java script.
   b) Describe about CSS in detail.

4. a) What is XML? Explain the need for XML.
   b) Write short notes on XML Processors.

5. a) Describe the different properties of java beans.
   b) Explain about java beans API.

6. a) Describe about the life cycle of Servlet.
   b) Write a Servlet code which can read parameters from a web page.

7. a) Describe the various conditional processing.
   b) Write short notes on AJAX.

8. a) Write a sample java program to connect a database using JDBC.
   b) Discuss about JDBC drivers.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science]

Time: 3 hours **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Write about encapsulation.
    b) Explain about relations in UML.

2. a) Explain about stereotypes, tagged values and constrains in UML.
    b) Explain about static parts of a system.

3. a) Explain the following illustrating interaction diagram
        i.   Focus of control
        ii.   Object lifeline
        iii. Dewey decimal numbering
    b) Consider modeling railway reservation system. Consider the use case " buy tickets " and draw collaboration diagram. Explain briefly.

4. a) Explain about activity diagram.
    b) Explain about process, thread and synchronization.

5. a) Explain about library automation.
    b) Explain about reverse engineering in component diagram.

6. a) Explain about architecture centric.
    b) Explain about four P's.

7. a) Explain about archetypal inception phase.
    b) Explain about core work flows.

8. a) What is workflow? Differentiate iteration and core workflow.
    b) Explain about the activities that takes place in construction phase.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012

OPERATING SYSTEMS

[Computer Networks and Information Security, Computer Science]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. What are the different types of operating systems available? Briefly explain them.

2. a) Explain the Round robin scheduling algorithm
   b) What are the different states of a process?

3. Explain the memory management technique Paging.

4. Explain all the strategies involved in deadlock detection and how it is recovered.

5. How Monitors can be used for synchronization of the processes.

6. a) Which type of process is generally favoured by a multi-level feed back queuing scheduler, a processor bound process or an I/O bound process? Briefly explain why?
   b) Consider a variation of round-robin that we will call priority round-robin. In priority round-robin each process has a priority in the range of 1 to 10. When a process is given a time slice the length of quantum is basic constant (say 50 ms) times the priority of the job. Compare this system with an ordinary priority system.

7. a) What is the difference between computer network and distributed system?
   b) How ATM is different from Internet.

8. a) How clocks are synchronized in a distributed system.
   b) Explain the Bully algorithm in Distributed system.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech II Semester (SVEC10) Regular Examinations September - 2012
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) Define the term cloud computing? Explain different services provided by typical clouds?
    b) Explain the role of different players in cloud computing domain?

2. What is Service Oriented Architecture (SOA)? Discuss SOA in the context of cloud.

3. a) Define the term data center? Briefly discuss the various aspects of cloud data centers?
    b) List the typical characteristics/features of data centers in cloud computing?

4. a) Analyze the risks vs. benefits of cloud computing.
    b) What is a cloud cube model? Explain with the help of a diagram.

5. Discuss the operational benefits and economic benefits of cloud computing. Also explain the factors to be considered before we employ a SaaS solution.

6. Explain the benefits of cloud computing for everyone?

7. Cloud is a way to collaborate online. Discuss other ways to collaborate online like web-based communication tools, groupware and social networking. Compare the technologies.

8. What are compute clouds? Discuss three example compute clouds.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
ADAPTIVE SIGNAL PROCESSING
[Communication Systems, 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) Explain the process for updating the weight vectors for Adaptive linear combiner.
   b) What is mean square error? How does it explain the performance of Adaptive system.

3. a) Discuss about a simple gradient search algorithm and its solution.
   b) State and explain stability and rate of convergence of the gradient search algorithm.

4. Derive a discrete form of Newton's algorithm. Extend the algorithm to the multivariable case.

5. a) Prove that the set of equations used to find weights of a transversal filter are identical to Wiener-Hopf equations.
   b) Derive the canonical form representation of error performance surface.

6. a) Consider a correlation matrix $\phi(n) = u(n)u^H(n) + \delta I$ Where $u(n)$ is tap input vector and δ is a small positive constant. Use the matrix inversion lemma to evaluate $P(n) = \phi^{-1}(n)$.
   b) Give the convergence analysis of RLS algorithm.

7. a) Explain in detail different variants of Kalman filter
   b) Draw the block diagram of One step predictor for the extended Kalman filter and explain.

8. a) Give the practical considerations of Blind Deconvolution with the help of an example.
   b) Explain the Buss Gang algorithm for blind equalization of real base band channels.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
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) Discuss Source - coding theorem and derive equation for efficiency.
   b) Consider a discrete memory less source with source alphabet $\{S_o, S_1, S_2\}$ with respective Probabilities $P_o=1/4$, $p_1=1/4$, and $p_2=1/2$. Find entropy of the source.

2. Consider an alphabet of a discrete memory less source having five discrete source symbols with their respective probabilities as 0.1, 0.2, 0.4, 0.1 and 0.2
   a) Create a Huffman tree following the standard algorithm for the Huffman coding.
   b) Compute the code word for each of the given source symbols
   c) Find the length of the code words for each source symbol.
   d) Determine the average code word length.
   e) Determine the entropy of the specified discrete memory less source.
   f) Comment on the results obtained.

3. Consider a (7, 4) linear block code whose generator matrix is given below

$$G = \begin{bmatrix} 1 & 0 & 0 & 0: & 1 & 0 & 1 \\ 0 & 1 & 0 & 0: & 1 & 1 & 1 \\ 0 & 0 & 1 & 0: & 1 & 1 & 0 \\ 0 & 0 & 0 & 1: & 0 & 1 & 1 \end{bmatrix}$$

   a) Find all code vectors of this code
   b) Find the parity check matrix of this code.
   c) Find maximum weight of this code.

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. Generator matrix of a (7,4) block code is

$$G = \begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 1 & 1 \end{bmatrix}$$

   (i) Determine the parity check matrix.
   (ii) Determine the maximum weight of the code.

6. a) Draw the typical Trelli's diagram and explain how it is useful.
   b) Explain the maximum likelihood decoding of convolutional codes.

7. Consider the message sequence m = 1 1 0 1 1, code word sequence U = 1 1 0 1 0 1 0 0 0 1 and the received sequence was Z = 1 1 0 1 0 1 1 0 0 1. Draw the decoding Trelli's diagram using Viterbi decoding. Explain the procedure used for this decoding.

8. a) List the Properties of binary BCH codes.
   b) Explain the decoding procedure of BCH codes.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
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. Discuss the optimum receiver so that, detection is maximum in case of binary signals.

2. a) Find the likelihood ratio for the multivariate Gaussian distribution?
    b) Design a filter that maximizes the output signal-to-noise ratio when the transmitted signal y(t) is observed in additive white noise of spectral density No/2. The signal y(t) is given by

    $$y(t) = \left\{ e^{-\frac{t}{2}} - e^{-t} \quad t \geq 0 \right.$$
    $$0 \quad t \leq 0$$

    What is the maximum output SNR?

3. State and explain maximum likelihood estimator, under what conditions it gives best estimation.

4. a) Why Bayes estimator can not be used to estimate a nonrandom but unknown constant parameter?
    b) We have N independent observations, z_i, i=1,2,....N of a Gaussian variable with mean m and variance σ^2, which are unknown. Obtain the maximum likelihood estimates.

5. a) Explain how variance is used to determine the effectiveness of an unbiased estimator?
    b) Prove that any estimate exists that meets Cramer-Rao bound, it will be equal to the Maximum Likelihood estimation.

6. State and explain the properties of matched filter.

7. Obtain the MAP estimate for the scalar parameter 'θ' for the observation
    y = ln(θ) + n
    where P(θ) = 1,   0 ≤ θ ≤ 1
            = 0,   other wise
    where P(n) = e^{-n},   n ≤ 0
            = 0,   other wise

8. a) Prove that a statistic is a sufficient statistic if the conditional density is independent of θ.
    b) What is likelihood function? How it is used to estimate a function?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012

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 are the elements of a Network? What is the total delay experienced by a packet between source and destination. How it can be reduced.
    b) What is the need for layered architecture? Explain and compare OSI and TCP reference models.

2. a) Discuss ISDN channels, BRI and PRI interfaces. Obtain the transmission rates of these Interfaces.
    b) Describe BISDN reference model in detail.

3. a) List out the characteristics of ATM networks
    b) Explain the Significance of virtual paths and virtual circuits in ATM networks.

4. a) What are the various functions supported by Transmission convergence sublayer? Explain HEC operation in detail?
    b) Discuss briefly about ATM service categories?

5. a) Mention ATM switching requirements.
    b) Explain various concepts involved in Batcher-Banyan networks with neat diagram.

6. a) Write a brief note on ATM addressing
    b) Explain congestion avoidance and ABR congestion control mechanisms of ATM networks.

7. a) What is elastic and inelastic traffic? With the help of block diagram explain the functions ISA components?
    b) What are the goals of RSVP protocol?

8. a) Give the format of TCP header. Explain the different fields in it.
    b) Explain how TCP prevents congestion collapse?

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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012

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) Discuss about 2nd Generation Cellular Networks in detail.
    b) Give an overview of the IEEE 802.xx wireless standards that are used in present day scenario.

2. a) Describe the three basic mobile radio propagations mechanisms
    b) Explain Durkin's Model of Outdoor propagation Model.

3. a) Discuss impulse response of multipath channel model?
    b) Explain in detail Parameters of Mobile multipath channels.

4. a) Explain Trunking and grade of service.
    b) Explain the handoff and various methods of prioritizing handoffs.

5. a) Prove that for a hexagonal geometry, the co-channel reuse ratio is given
       by $Q = \sqrt{3N}$ where N is the cluster size.
    b) Explain various techniques that are used to improve coverage and capacity in cellular systems.

6. a) Explain about the super frame structure used in TDMA.
    b) With suitable block diagram(s), explain a CDMA communication system when the channel is AWGN.

7. a) Explain the concept of Space diversity in MIMO Wireless Communication systems.
    b) Derive the mathematical model for MIMO channels?

8. Write the following:
       (a) CDMA-2000.   (b) Signal Processing in GSM.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
OPTICAL 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) With reference to fiber transmission, explain the significance of the terms :
      i) refractive index profiles, ii) V Number and cut-off wavelength, iii) Bending losses,
      iv) MFD, v) non-linear effects.
   b) Define and estimate the pulse broadening and bit-rate distance product for a 1 km. long
      multimode fiber, with core refractive index of 1.5 and $\Delta = 0.02$.

2. a) List out the types of materials suited for optical fiber cables and their characteristics.
   b) Mention the different types of fiber drawing techniques, and describe the process involved
      for drawing graded index fibers, with neat sketches.

3. a) Draw the schematic of an elastic-tube splicing of fibers and explain it.
   b) What are the principal requirements of a good connector design for optical fibers?

4. a) Draw the structure of Avalanche Photodiode and the electric fields in different regions and
      also explain its working.
   b) A GaAlAs laser diode has a 500μm cavity length which has an effective absorption
      coefficient of 10cm^{-1}. For uncoated facets the reflectivities are 0.32 at each end. What is the
      optical gain at the lasing threshold? If the internal quantum efficiency is 0.65, what is the
      external quantum efficiency?

5. a) Show that the resonant frequencies f_n of a Fabry-Perot cavity satisfy $f_0 + n\Delta f$, where n
      integer, for some fixed f_0 and Δf.
   b) Explain how an interleaving approach provides a realization for large channel count
      demultiplexers.

6. a) Compare the performance characteristics of RZ and NRZ signaling schemes used for optical
      transmission with neat sketches, and comment on the DC balance feature.
   b) List out the merits and demerits of a Coherent Detection Receiver. How does it improve the
      sensitivity ?

7. a) Explain the working of FTTC with the help of architecture and compare it with HFC network.
   b) Explain the functioning of a bit-interleaved optical multiplexer and also explain how a lower-
      speed data streams are multiplexed into a higher speeds stream?

8. a) What are the special considerations has to be considered in the design of soliton systems?
   b) What type of error control coding techniques are used to reduce BER in optical
      communication? Explain any one of them.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
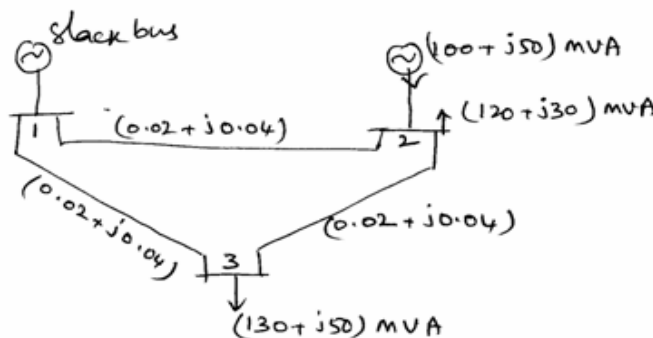**ECONOMIC OPERATION AND CONTROL OF POWER SYSTEM**
[Electrical Power Systems]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the need of load forecasting.
    b) Derive the Hessian matrix for economic dispatch by Newton's method.

2. a) Describe the thermal unit constraints in unit commitment.
    b) What are the merits and demerits of priority list method and write down its
        shut-down algorithm.

3. Illustrate the operation of pumped-storage hydro-plant? Explain its scheduling with λ-γ iteration
    and also mansion the necessary assumptions.

4. a) Explain the tie-line bias control
    b) Derive the expression for incremental tie line power of an area in an uncontrolled two-area
       system under dynamic state for a step load change in either area.

5. Briefly explain the transmission effects and issues 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) Explain the need of contingency analysis for power security.
    b) Describe the AC power flow for contingency analysis with out and with
        power system security.

8. a) Derive the sensitivity coefficients of an AC network model for linear sensitivity analysis
    b) Explain the interior point algorithm for optimal power flow

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
FACTS CONTROLLERS
[Electrical Power Systems]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the basic types of FACTS Controllers.
    b) Explain various benefits of FACTS Controllers.

2. Explain in detail, the comparison between Current Sourced and Voltage Sourced Converters.

3. How the shunt compensators are used for improvement of transient stability and power oscillation damping? Explain.

4. a) Explain the operation of TCR and TSR with their characteristics.
    b) Explain how the TCR and TSR can eliminate the harmonics in the system.

5. a) Explain the concept of Regulation Slope and transfer function.
    b) Explain the dynamic performance of the compensator using basic transfer function block diagram.

6. Explain the power oscillation damping and operating point control with neat block diagrams.

7. a) Explain the concept of static series capacitor compensation.
    b) Discuss the improvement of transient stability using static series compensators.

8. a) What are the various recent advancements in the UPFC design?
    b) Write the power flow control characteristics of UPFC compared to series compensators?

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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012

HVDC TRANSMISSION

[Electrical Power Systems]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions

All questions carry equal marks

1. a) Explain the various types of DC Links.
   b) Comparison of AC and DC Transmission with respect to technical performance and reliability.

2. a) With a circuit diagram and wave forms, explain the operation and derive the output voltage expression of a 6-pulse converter.
   b) Describe the various components of a converter station.

3. a) Identify the various sources for generation of harmonics in HVDC systems.
   b) Mention the various adverse effects caused due to the presence of harmonics.

4. a) Explain the principle of DC link control.
   b) What do you understand by constant extinction angle control? Explain in detail.

5. a) Discuss about the different sources of reactive power in HVDC systems.
   b) Explain the simultaneous method.

6. a) Explain the various types of MTDC Systems.
   b) Discuss the advantages and disadvantages of series and parallel MTDC System.

7. a) Briefly explain the voltage interaction between HVAC and HVDC Systems.
   b) Write short note on remedies for instability problems.

8. a) Explain the different converter faults.
   b) Describe the DC line over current protection.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
## POWER SYSTEM RELIABILITY
[Electrical Power Systems]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) The probability that a man will be alive in 10 years in 0.8 and the probability that his wife will be alive in 10 years in 0.9. Find the probability that in 10 years:
        i) Both will be alive   ii) Only the man will be alive
        iii) Only the wife will be alive   iv) At least one will be alive

    b) A point is selected at random inside a square whose side length is 4. What is the probability that its distance to any corner is grater than 2 ?

2. a) Draw and explain the importance of Bathtub curve. Derive the relation between reliability and failure rate.

    b) The probability density function of a system is defined by: $f(t) = 3t^2/10^9$, where, $0 \leq t \leq 1000$ hr.
    (i) Compute MTTF   (ii) Find the design life for a reliability of 0.99.

3. a) What is decomposition method? Explain with suitable example.

    b) For the system shown in Fig. out of the components 4, 5, 6 at least two must function for the system success. Develop symbolic reliability expression and hence evaluate the system reliability if each component has a probability of success of 0.85. If now out of the components 4, 5, 6 at least one of the components is sufficient for system success. Evaluate the reliability expression and hence system reliability index of the system.
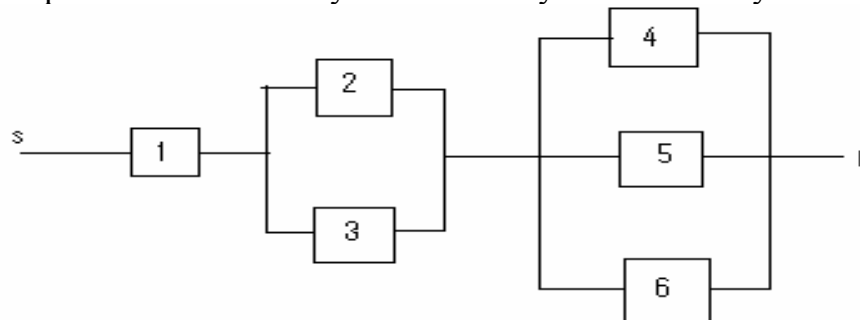
4. a) Explain Markov process and Markov chain with examples.

    b) The state space diagram and transition rates in failure/hr. of a continuous Markov process is shown in Figure. Calculate the limiting probabilities of each state.
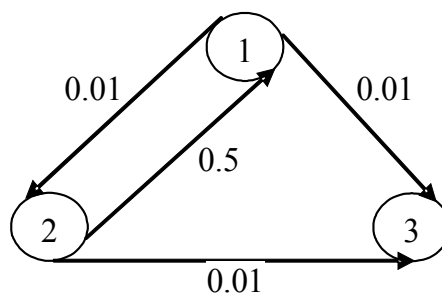

Fig. 1

5. a) Define the terms (i) Forced outage rate and (ii) Equivalent forced outage rate of generating system.

  b) A power system contains two 30 MW Hydro units of FOR of 0.005 each and one Thermal unit of 50 MW with an FOR of 0.02. The annual daily peak load variation curve is given by a straight line from the 100% to 40% points. Calculate the LOLP in days / yr. for a peak load of 100 MW.

6. a) Draw the state - space diagram for a two component repairable system and hence develop the expression for frequency encountering the states, MTTF and Mean cycle time.

  b) Describe the process of recursive evaluation of cumulative frequency.

7. Derive the necessary expression for the system failure of bulk power system using conditional probability approach.

8. a) Explain the effects of active and passive failures on substations and switching stations.

  b) Write a short note on preventive maintenance.

  c) Explain the effects of open circuit and short circuit failures on substations and switching stations.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
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. With the help of diagrams, explain the duality between amplitude and phase comparators.

2. a) Explain circulating current type amplitude comparator.
    b) Explain Integrating type phase comparator.

3. a) Explain three input amplitude comparator.
    b) Discuss combined and ground fault scheme.

4. a) Explain the operation instantaneous over current relay.
    b) Explain the operation of harmonic restraint relay.

5. What is an angle impedance relay? Discuss how its characteristic is realized using the phase comparison technique.

6. Describe the realization of a directional impedance relay using microprocessor.

7. Discuss the realization of MHO characteristics.

8. Explain the merits of digital and numerical relays.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
ENERGY AUDIT, CONSERVATION AND MANAGEMENT
[Electrical Power Systems]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Classify the types of energy available on earth.
    b) Explain the terms : energy index, cost index.

2. a) List the strategies for better energy security.
    b) Explain various methods available for monitoring the energy consumption.

3. a) Give bench marking parameters followed in the utility related industries.
    b) Explain the steps involved in energy management strategy.

4. a) Explain the percentage unbalance in voltage.
    b) Explain the factors affecting efficiency in case of energy efficient motors.

5. a) Explain the function of luminaire in a lighting system.
    b) List all the possible energy conservation measures possible in lighting system.

6. Explain the principle and operation of following instruments
    (i) Data Loggers   (ii) Lux meters   (iii) Tongue testers   (iv) Pyrometers

7. a) Explain life cycle cost analysis of an electrical motor.
    b) Explain the significance of the term 'depreciation' and how it affects the cost analysis.

8. a) A machine owner finds from his past records that the costs per year of maintaining a machine whose purchase price is Rs 6000/- are given as below

Year	1	2	3	4	5	6	7	8
Maintenance Cost in Rs.	1000	1200	1400	1800	2300	2800	3400	4000
Resale price Rs	3000	1500	750	375	200	200	200	200

   Determine at what age the replacement is due?
    b) Explain the life cycle costing application to energy efficient motors.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
SERVICE ORIENTED ARCHITECTURE
[Software Engineering]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. Discuss common tangible benefits and pitfalls of SOA.

2. a) Give the description of the fundamental service roles.
   b) Explain utility service model
   c) What is role of SOAP in messaging?

3. How to handle reliable messages with SOA? Discuss with examples.

4. Discuss the common set of principles associated with service orientation.

5. Explain various service layers 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. Give the structure of a WSDL definition and discuss the basics of WSDL language.

8. Discuss the WS-BPEL language basics, WS-Metadata language basics, and WS-Policy language basics.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
SOFTWARE ARCHITECTURE AND DESIGN PATTERNS
[Software Engineering]

Time: 3 hours   **Max Marks: 60**
Answer any FIVE questions
All questions carry equal marks

1. Discuss about architecture patterns, reference models and reference architectures.

2. a) Explain uses of architectural documentation.
    b) Explain about architecture reconstruction activities.

3. a) Explain the basis for the CBAM.
    b) Explain the steps in implementing the CBAM.

4. Discuss about following :
    a) Adoption strategies
    b) Product line organization models

5. What is a design pattern? Describe about design patterns?

6. Explain about Abstract factory in detail.

7. Explain about Chain of responsibility.

8. Discuss A-7E- a case study in utilizing architectural structures.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
SOFTWARE REENGINEERING AND REUSE
[Software Engineering]

Time: 3 hours   **Max Marks: 60**
Answer any FIVE questions
All questions carry equal marks

1. Define Business Process and explain Business Process Reengineering model with a neat diagram.

2. a) What are the principle factors that affect the cost of system re-engineering?
   b) What are the essential conditions for software re-engineering to be successful?

3. a) Differentiate the code and data restructuring.
   b) What are the basic characteristics of unstructured code?

4. When and why refactoring should be carried out and briefly explain the problems involved in refactoring.

5. Explain in detail how the forward engineering can be applied to Client/Server application.

6. a) Explain about Forward engineering user interfaces.
   b) Explain about Application and Component system.

7. Do you agree that reuse driven software engineering is a business? Justify your answer.

8. Differentiate Application Family Engineering and Application System Engineering with respect to processes.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
SOFTWARE SECURITY ENGINEERING
[Software Engineering]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) How to manage the secure software development? Explain.
    b) Describe the benefits of detecting software security defects early.

2. Write about the Influential Properties of Secure Software with help of a diagram?

3. Give the overview of Several Elicitation Methods?

4. a) Describe the issues and challenges in secure software architecture and design.
    b) What is 'Threat Analysis' with respect to Architectural risk analysis?

5. List out the common software Code Vulnerabilities? Explain in detail about each of them?

6. a) Explain system assembly challenges with respect to surety and security and complexity.
    b) Describe the Attacker Behavior in security failures.

7. Explain the characteristics of effective security governance and management.

8. Discuss the following in coverage and control.
    a) Antivirus and Antispyware.
    b) Patch management.
    c) Host configuration.
    d) Vulnerability management.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
SOFTWARE QUALITY ASSURANCE AND TESTING
[Software Engineering]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Why quality standards are needed?
    b) In which way CMM differs from CMMI?
    c) Differentiate the terms "Validation" and "verification"?
    d) Define software quality assurance?
    e) Define cost of quality?

2. a) List out the metrics for software maintenance.
    b) Briefly discuss about the validation of software quality metrics.

3. Explain briefly about the economics of system development life cycle testing.

4. a) Discuss the testing an organizational issues and establishing a testing policy?
    b) Explain the structured approach to testing and test strategy?

5. a) Distinguish between Bottom-up approach and top-down approach.
    b) Write brief note on the following:
        i) Random testing
        ii) Thread testing
        iii) Performance testing.

6. a) Briefly explain the taxonomy of testing tools.
    b) Give an example of testing tool and explain rational testing tools.

7. Explain the taxonomy of software testing tools? Why do we need the software testing tools?

8. Explain the requirement phase testing, design phase testing and program phase testing with limitations?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
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) Describe in detail about functional overview of an information Retrieval systems.
    b) Compare Digital libraries and Information Retrieval systems.

2. What are the different capabilities of Information Retrieval Systems? Explain with respect to the following:
    i. Search.
    ii. Browse.

3. a) Discuss history and objectives of indexing.
    b) Write a note on Information extraction. What are the five feature sets considered for typical algorithms on information extraction?

4. a) Define stemming? What are its advantages? Discuss on stemming algorithms.
    b) What is N-gram? Discuss in detail.

5. a) What are the problems with weighting approach in Automatic Indexing? Discuss.
    b) How do the concepts underlying Discrimination Value indexing provide a good or poor basis for searching items? Explain.

6. Write detailed notes on
    i. Hierarchical clustering and
    ii. Item clustering.

7. a) Explain how similarity measures can be used to calculate similarity factor. Explain.
    b) What is Relevance feedback? How it is related to user search techniques. Explain.

8. a) Explain Text streaming search system with neat diagram.
    b) Differentiate Software and hardware Text search systems with an example.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
**ALGORITHMS FOR VLSI PHYSICAL DESIGN AUTOMATION**
[VLSI]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain various design methods.
   b) What is spanning tree? Explain how minimum spanning tree algorithm will improve the performance of the circuit?

2. a) What is TSP? Relate the TSP problem to VLSI circuit placement and routing?
   b) Discuss how the optimal solution is achieved using dynamic programming. Give an application.

3. The graph shown in the figure (1) represents a bisectional partition of a digital circuit. By using KL algorithm with the graph as input, find the optimum bisectional partition with minimum cut size.
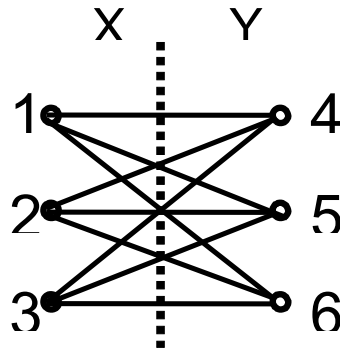
Figure (1)

4. a) Explain about the gate-level modeling and simulation?
   b) What are the levels used in simulation?

5. a) Explain BDD package briefly.
   b) An 'ite' operator is useful in ROBDD manipulation, Explain.

6. a) How a high level synthesis system is represented?
   b) Explain terms allocation, assignment and scheduling.

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 partitioning, placement and routing related to physical design automation of MCMS.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
CPLD AND FPGA ARCHITECTURES AND APPLICATIONS
[VLSI]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) Design a combinational circuit that accepts a 3-bit number as input and generates an output binary number equal to square of the input number.
    b) Explain how to programming a 4X2 ROM. Draw the truth table and its logic diagram.

2. a) Draw and explain the block diagram and PAL block structure of MACH-4 family CPLD devices.
    b) Compare the important features of Altera based Max 5000, Max 7000 and FLEX 10K complex programmable logic devices.

3. a) Draw and explain the block diagram of FLEX 10000 device and give the significance of its Embedded Array Block.
    b) With the aid of ACT-2 Combinational module structure, explain the architecture of ACTEL's ACT-2 programmable logic device.

4. a) Perform the realization of state machine charts using microprogramming. Consider a suitable example.
    b) Elaborate top down design approach using Finite State Machines. Illustrate the same with suitable example.

5. a) Design and implementation of one-to-three-pulse generator using Field Programmable Gate Array. Draw the relevant logic diagram.
    b) Explain the basic properties of Petri nets for state machines. Explain with an example of nonlive Petri net.

6. a) What is meant by Meta Stability? Explain its significance with proper illustration.
    b) Describe a traffic light controller using the Petri net notation which allows the basic controller function.

7. a) Draw and explain a typical ASIC design flow with necessary EDA tool.
    b) Explain the system level design using mentor graphics EDA tool, FPGA Advantage. Consider a suitable example.

8. Perform the design, development and implementation of Binary Parallel Adder/Subtractor using FPGA. Give the design considerations, ASM chart, state diagram and necessary source code to implement the same. Write notes on necessary EDA tool required.

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CODE No.:10MT25703

SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
DIGITAL SYSTEM TESTING AND TESTABILITY
[VLSI]

Time: 3 hours **Max Marks: 60**
Answer any FIVE questions
All questions carry equal marks

1. a) Explain how various encountered in digital circuits can be modeled.
   b) Explain the internal representation of a structural model of a circuit with emphasis on element table, signal table, fan in and fan out table.

2. a) What is parallel fault simulation? Explain it with suitable example.
   b) Define the terms.
      i) Fault equivalence
      ii) Fault Dominance

3. a) Construct the truth table of an XOR function of two inputs using the five logic values 0,1,x,D,D'(D-bar).
   b) Write short notes on testing of sequential circuits.

4. a) Explain scan based design for improving testability of the circuit. Give the architecture of generic boundary scan.
   b) Explain how partitioning can be used to reduce the cost of test generation.

5. a) Define the terms controllability and observability with reference to digital circuits.
   b) Explain syndrome checking and signature analysis techniques in detail.

6. a) Differentiate between offline and online BIST techniques.
   b) Explain any 3 test pattern generators used with pseudo exhaustive testing.

7. a) Explain briefly about the memory test architectures.
   b) Write short notes on: Embedded memory testing model.

8. What is automatic in circuit testing? Explain with suitable example.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
LOW POWER VLSI DESIGN
[VLSI]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Give an overview of low-voltage, low-power VLSI Design.
    b) What are the layout methodologies that are commonly used for the physical implementation of complex circuits? Discuss about them, in brief.

2. a) Explain shallow and deep trench isolation in MOSFET with required diagrams.
    b) Explain the latch up in CMOS logic and discuss the techniques to reduce latch up.

3. a) What are the various low-capacitance Bipolar/BiCMOS processes? Describe the process flow illustrating formation of PRET, a single-poly npn transistor and a pMOS transistor with neat sketch.
    b) Illustrate $0.2\mu m$ SOI BiCMOS process flow.

4. a) What are the various advanced MOSFET models? Describe HSPICE Level 50 model.
    b) Describe the pinch-off voltage extraction method with respect to the EKV MOSFET model. Give the relevant circuits.

5. Discuss surface p - channel for sub - half micron devices and its DC model parameters.

6. a) Discuss different power dissipation factors in CMOS circuit.
    b) Design and explain full swing CMOS/BiCMOS two input NAND gate (FS - CMBL).

7. a) Discuss about the high-beta BiCMOS digital circuit with a low-input capacitance to achieve high-speed operation at sub 2-V supply voltage.
    b) Describe any one of the transiently saturated full-swing BiCMOS digital circuit with neat sketch.

8. Explain the power reduction techniques for high speed bus.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech II Semester (SVEC10) Regular/Supplementary Examinations September - 2012
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 how digital circuits are parsed with scripting languages?
   b) Explain the VB Script procedure with an example?

2. a) Explain the additive operators of Perl with an example.
   b) State the relational operators of Perl for numeric variable and string variables.

3. a) Distinguish between Meta characters and Meta symbols used in Perl language.
   b) Explain about Hash-Tying and Scalar-Tying methods used in Perl language.

4. a) Describe the Environmental Variables used for Command-Line Interface with suitable example.
   b) Write an algorithm and develop necessary source code in Perl to open a file for read and write operations and to determine the number of lines and characters present in the file.

5. a) What is Command-Line interface? Discuss about command processing.
   b) Write an algorithm and develop relevant Perl program to convert a given octal number to decimal and hexadecimal numbers. Consider a suitable example.

6. a) Explain XS and XSOBS functions used in Perl programming with suitable examples.
   b) Write notes on Perl Debugger.

7. a) Explain how Debugger Customization is performed in Perl programming.
   b) Discuss about Embedding and Extending Perl programming.

8. a) Explain the VB Script operators and statements with proper examples.
   b) Write an algorithm and develop a simple Perl program for a regular expression that finds duplicate words in paragraphs.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
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M.Tech II Semester (SVEC10) Regular Examinations September - 2012
REAL TIME OPERATING SYSTEMS
[VLSI]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What are UNIX system calls for I/O.
    b) Explain semaphore functionality in UNIX.

2. Differentiate real-time application according to their timing attributes. Explain with an example?

3. a) What is resource graph and explain?
    b) Differentiate Soft and Hard Real time systems?

4. Explain EDF algorithm with an example.

5. a) Write short notes on EDF scheduling?
    b) Explain asynchronous timer functions with an example?

6. a) Short notes on Software redundancy.
    b) What is need of Data redundancy in fault tolerance system?

7. a) List the important features of Vx Works.
    b) Explain the timer related functions of Vx Works.

8. a) Explain the application areas of RT Linux.
    b) What is the function call provided for timer management in RT Linux?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC10) Supplementary Examinations April - 2012

GENETIC ENGINEERING

[Bio-Technology]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Bring out the major contributions that are responsible for the present day knowledge in genetic engineering.

2. Describe the method for isolating DNA from the microbial cells.

3. Describe the structure of Ti plasmid and write about its application in agriculture.

4. Differentiate between RT-PCR and PCR. Describe a method for constructing a cDNA library.

5. Differentiate body and end labeling of a DNA molecule. Describe a method for radioactive end labeling of DNA.

6. Write notes on RNase protection assay.

7. Write notes on the following.
   a) Codon optimization.
   b) Purification of recombinant proteins.

8. Differentiate PCR and RT-PCR. Discuss about the role of reverse transcriptase in recombinant DNA technology.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech II Semester (SVEC10) Supplementary Examinations April - 2012
FACTS CONTROLLERS
[Electrical Power Systems]

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the concept of power flow and dynamic stability considerations of a transmission interconnection.
    b) Explain the importance of controllable parameters in FACTS devices.

2. a) Explain the transformer connections for 12-Pulse operation.
    b) Explain the operation of Three-Level Voltage Sourced converter.

3. a) Explain about the performance of SVC in controlling voltage in a power system.
    b) What are the advantages of slope in the dynamic characteristics of SVC?

4. a) Explain the operation of TCR and TSR with their characteristics.
    b) Explain how the TCR and TSR can eliminate the harmonics in the system.

5. a) Explain the regulation and slope transfer function of SVC?
    b) Briefly describe the way by which the transient stability is enhanced due to static VAR compensator.

6. What are the objectives of series compensation? Explain in detail.

7. Explain the operation of thyristor tap changer supplying
           i) Resistive Load
          ii) Inductive Load

8. Explain the basic operating principles and control structure of IPFC.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Anantapur)
M.Tech II Semester (SVEC10) Supplementary Examinations April - 2012
POWER SYSTEM RELIABILITY
[Electrical Power Systems]

Time: 3 hours   Max Marks: 60

Answer any FIVE questions
All questions carry equal marks

1. a) What is a continuous distribution? Mention the properties of the same.
    b) For the PDF $f(x) = ax(1-x)$, where, $0 \leq x \leq 1$, determine the constant 'a', mean 'μ' and standard deviation 'σ'.

2. a) Draw and explain the importance of Bathtub curve. Derive the relation between reliability and failure rate.
    b) The probability density function of a system is defined by: $f(t) = 3t^2/10^9$, where, $0 \leq t \leq 1000$ hr.
        (i) Compute MTTF   (ii) Find the design life for a reliability of 0.99.

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.
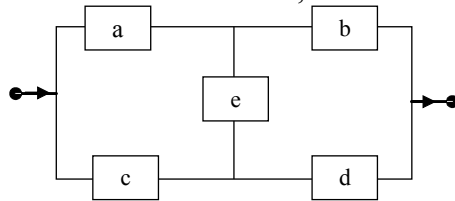

Fig. 1

4. a) Draw and explain state-space diagram of single repairable component with partial output state.
    b) The following stochastic transitional probability matrix P shows the transition rates per hour of a continuous Markov process. Construct the state-space diagram and evaluate the MTTF given that the system starts in state 1.

$$P = \begin{matrix} 1 \\ 2 \\ 3 \end{matrix} \begin{bmatrix} 0.90 & 0.05 & 0.05 \\ 0 & 0.95 & 0.05 \\ 0 & 0 & 1 \end{bmatrix}$$

5. a) Define   (i) LOLE and   (ii) LOEE   .
    b) Prepare a capacity outage probability table with cumulative probabilities for a four 50 MW units system with failure rate and repair rate of 0.4 /yr and 9.6/yr respectively. Draw the state-space diagram.

6. Explain the evaluation of cumulative probability and cumulative frequency of encountering of merged states with suitable example.

7. Explain the transmission system reliability analysis using weather effects.

8. a) Mention different operating and failure states for normally closed and normally open circuit breakers
    b) Explain the importance of the following load oriented indices:
            (i) ENS   (ii) AENS   (iii) ACCI

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